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# SOURCES OF HYDROGRAPHIC AND METERIOLOGICAL DATA ON THE GREAT LAKES



UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

# Explanatory Note

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United States Department of the Interior, Fred A. Seaton, Secretary Fish and Wildlife Service, Arnie J. Suoemla, Commissioner

# SOURCES OF HYDROGRAPHIC AND METERIOLOGICAL DATA ON THE GREAT LAKES

by

Charles F. Powers and David L. Jones
Research Associates
and
John C. Ayers, Project Director
Great Lakes Research Institute
University of Michigan
Ann Arbor, Michigan

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# TABLE OF CONTENTS

		Page
1.	Introduction	1
2.	Procedure	3
3. 4.	Compilation of information	10
	Table 1. Onshore data sources	11
	Lake Superior	18
	St. Marys River	32
	Lake Michigan	38
	Lake Huron	64
	St. Clair River - Lake St. Clair - Detroit River	76
	Lake Erie	82
	Niagara River	96
	Lake Ontario	100
	Table 2. Inland data sources	110
	Minnesota	113
	Wisconsin	113
	Illinois	115
	Indiana	115
	Michigan	117
	Ohio	120
	Pennsylvania	122
	New York	122
	Ontario	125
	Table 3. Unusable data sources	130
5.	Summary	132
	sources	133
	Table 5. Summary of knowledge of usable data sources .	135
App	endix I - Bibliography	139
App	endix II - Index and period of record for meteorological stations in Ontario	160
		100
	List of Figures	
1.	Questionnaire on meteorological and hydrographic records	5
2.	Orientation chart, Lake Superior and St. Marys River	17
3.	Orientation chart, Lake Michigan	37
4.	Orientation chart, Lake Huron	63
5.	Orientation chart, Lake Erie (including St. Clair River, Lake St. Clair, Detroit River, and Niagara River)	75
6.	Orientation chart, Lake Ontario	99
7.	Orientation chart, Great Lakes drainage basin	112
8.	Percent frequency of all potential data sources	137
	Summary of knowledge of all potential data sources	138



#### 1. INTRODUCTION

The Great Lakes are undoubtedly the most important single source of fresh water in the world. Their waters are utilized for numerous economic needs, such as commercial and sport fishing, power generation, municipal water supplies, industrial uses, recreation, and navigation. In line with this high degree of economic importance, the Great Lakes are now and will most likely continue to be the subjects of various scientific studies and investigations, carried out with a view toward obtaining a more lucid understanding of their physical, chemical, and biological properties and mechanisms. In conjunction with studies such as these, personnel of the Great Lakes Fisheries Investigations suggested that a great deal of limnological and meteorological information relative to the Lakes and their drainage basins would likely be available from agencies in both the United States and Canada. Likely sources would be those which routinely make use of raw lake water, such as municipal water treatment plants, disposal plants, power plants, and industries. In addition, it was believed that data might also be obtained from various governmental agencies -- federal, state, and provincial. Parameters which might possibly be located were thought to include water temperature, turbidity, pH, color, and odor; chemical analyses of water; biological analyses, such as bacterial and plankton counts; water level; lake surface condition; and numerous meteorological observations, such as air temperature, precipitation, wind speed and direction, humidity, radiation, evaporation, pressure, visibility, and cloud cover.

Up to the present time little was known specifically about the availability, reliability, and extent of any data such as those enumerated above. In addition, data would likely be widely scattered and hence of little practical use to anyone interested in utilizing the contained information. It became apparent, therefore, that the location and evaluation of these collateral data should become the object of a special study.

It was proposed that the execution of such a study could best be accomplished in three phases, with the exact nature and extent of each succeeding phase governed by findings of the preceding one. Phase I would be designed to locate and determine the extent of records in the Great Lakes area that might be useful in developing a better understanding of Great Lakes hydrography. Phase II would involve a pilot study in a selected section of the Great Lakes in which all available data would be examined to determine the reliability and usefulness of the various types of records. In Phase III all records demonstrated by Phase II to be of value in hydrographic and biological studies of the Great Lakes would be accumulated over a period determined by the completeness and congruity of data, and recorded in a form suitable for easy reference and use in future studies.

Phase I was undertaken by the Great Lakes Research Institute during the past fiscal year, and is the subject of the present report.

Many persons, institutions, and agencies have been of immeasurable aid in the successful conduct of this investigation. The investigators wish to gratefully acknowledge the invaluable assistance and whole-hearted cooperation of the following persons who, in various ways, were instrumental in helping locate sources of meteorological and hydrographic data: Dr. James W. Moffett, Chief, Great Lakes Fishery Investigations, U. S. Fish and Wildlife Service, Ann Arbor, Michigan; Dr. Stanford H. Smith,

Fishery Research Biologist, U. S. Fish and Wildlife Service, Ann Arbor, Michigan; Dr. Ralph Hile, Fishery Research Biologist, U. S. Fish and Wildlife Service, Ann Arbor, Michigan; Dr. Alfred M. Beeton, U. S. Fish and Wildlife Service, Ann Arbor, Michigan; James H. Johnson, Fishery Research Biologist, U. S. Fish and Wildlife Service, Ann Arbor, Michigan; Dr. D. V. Anderson, Ontario Department of Lands and Forests, Maple, Ontario; Dr. Albert Ballert, Great Lakes Commission, Ann Arbor, Michigan; N. H. Beamer, U. S. Geological Survey, Philadelphia, Pennsylvania; Dr. Albert E. Berry, General Manager, Ontario Water Resources Commission, Toronto, Ontario; Prof. Herbert M. Bosch, School of Public Health, University of Minnesota, Minneapolis, Minnesota; C. C. Boughner, Chief, Climatological Section, Department of Transport, Toronto, Ontario; A. V. DeLaporte, Director of Laboratories and Research, Ontario Water Resources Commission, Toronto, Ontario; Earl Devendorf, Director, Bureau of Environmental Sanitation, New York State Department of Health, Albany, New York; A. H. Eichmeier, State Climatologist, U. S. Weather Bureau, East Lansing, Michigan; N. G. Gray, Dominion Hydrographer, Department of Mines and Technical Surveys, Ottawa, Canada; J. R. Harvey, Regional Sanitary Engineer, Department of Health, Commonwealth of Pennsylvania, Meadville, Pennsylvania; J. H. Hubble, U. S. Geological Survey, Columbus, Ohio; Russell L. Johnson, Engineer in Charge, Michigan Department of Health, Escanaba, Michigan; Ray Joiner, Assistant to the Director, National Weather Records Center, U. S. Weather Bureau, Asheville, North Carolina; Lothar A. Joos, State Climatologist, U. S. Weather Bureau, Champaign, Illinois; Homer Knox, Principal Assistant Sanitary Engineer, State Department of Health, Columbus, Ohio; Robert Knutilla, U. S. Geological Survey, Escanaba, Michigan; W. T. Laidley, Chief Technical Assistant, U. S. Lake Survey Office, Detroit, Michigan; C. R. MacLean, Captain, U. S. Coast Guard, Chief, Operations Division, Ninth Coast Guard District, Cleveland, Ohio; Colin MacMillan, Marathon Paper Mills, Marathon, Ontario; Dr. O. J. Muegge, State Sanitary Engineer, State of Wisconsin Board of Health, Madison, Wisconsin; L. T. Pierce, State Climatologist, U. S. Weather Bureau, Columbus, Ohio; Dr. B. A. Poole, Director, Bureau of Environmental Sanitation, Indiana State Board of Health, Indianapolis, Indiana; H. W. Poston, Assistant Regional Engineer, U. S. Public Health Service, Chicago, Illinois; Jack Rademacher, Sanitary Engineer, U. S. Public Health Service, Chicago, Illinois; Lawrence A. Schaal, State Climatologist, U. S. Weather Bureau, Lafayette, Indiana; Cdr. E. O. Standish, Office of Chief of Naval Operations, U. S. Navy, Washington, D. C.; The State Climatologist, U. S. Weather Bureau, Albany, New York; Joseph H. Strub, Jr., State Climatologist, U. S. Weather Bureau, Minneapolis, Minnesota; J. F. J. Thomas, Head, Industrial Waters Section, Department of Mines and Technical Surveys, Ottawa, Ontario; Kenneth G. Tower, Regional Engineer, Federal Power Commission, Chicago, Illinois; T. L. Vander Velde, Chief, Section of Water Supply, Division of Engineering, Michigan Department of Health, Lansing, Michigan; Paul J. Waite, State Climatologist, U. S. Weather Bureau, Madison, Wisconsin; Fredrick H. Waring, Chief Engineer, State Department of Health, Columbus, Ohio; George Whetstone, U. S. Geological Survey, Columbus, Ohio; G. H. Wood, District Engineer, Department of Northern Affairs and National Resources, Water Resources Branch, Ottawa, Ontario; Frank L. Woodward, Director, Division of Environmental Sanitation, Minnesota Department of Health, Minneapolis,

The investigators are no less indebted to the various persons who were contacted at the individual agencies during the course of the study. The limitations of space do not permit listing them here, but the majority have been identified in the tabulation of sources in Table 1. To all these persons who provided essential information, and thereby contributed to the successful completion of this survey, we extend our sincere thanks.

#### PROCEDURE

In order to expedite the search for data sources, the study was divided into two basic parts: the hydrographic and the meteorological. This was a natural division since the bulk of the meteorological data was expected to originate at points apart from the sources of hydrographic data. However, if was known that certain agencies obtaining routine hydrographic data also obtained concomitant meteorological observations. In such cases, it became the responsibility of the personnel in the hydrographic division of the study to ascertain the necessary information relative to the meteorological observations, and to then transmit it to personnel in the meteorological division. The primary reason that many meteorological sources are different from hydrographic sources is because it was deemed necessary to obtain meteorological data not only around the periphery of the Lakes, but inland for some distance as well. The influence of the Lakes on weather conditions, and the influence of weather on the Lakes, is known to encompass an area around the Lakes as well as over the Lakes themselves. The exact limits of this "area of influence" are yet not completely determined, but for the purposes of this study have been confined to the drainage area of the Great Lakes (Fig. 7).

The first effort by project personnel to locate all pertinent sources of meteorological data within the Great Lakes basin was made by contacting the National Weather Records Center of the U. S. Weather Bureau at Asheville, North Carolina, and the Meteorological Division of the Canadian Department of Transport in Toronto, Ontario. These two agencies provided project personnel with information on meteorological data that is published. This comprised the largest source of all types of data uncovered by the project: 808 sources or 68.6 per cent of the total of 1177 sources (see Table 4, p. 133).

All other meteorological data sources ascertained by the project are comprised of unpublished, unprocessed data on file at each station or a central repository. The data are recorded by U. S. Coast Guard Stations (some of the data from a few of these are published in U. S. Weather Bureau climatological summaries), water treatment plants, industries and power plants, sewage treatment plants, paper mills, commercial and research lake vessels, and a few other sources such as university research groups, individual observers, and governmental and public service organizations.

The search for hydrographic sources was initiated by concentrating first upon the water treatment plants. Information concerning data available from such plants in the United States was obtained by contacting the head offices of the public health departments of the states bordering the Great Lakes: Illinois, Indiana, Michigan, Minnesota, Ohio, Pennsylvania, New York, and Wisconsin. In Michigan and Ohio, at least a portion of the data from these plants was found to be available from the head offices, where it is kept on file. In the other states, data are retained in the files of the individual plants, from which they may be obtained. Information on water treatment plants in Ontario was furnished by the Ontario Water Resources Commission.

Another source investigated early in the study comprised the power plants which utilize water from the Lakes. A list of all such plants on

the United States side of the Lakes was obtained from the Federal Power Commission at Chicago; this list included public utilities, industries, and municipal plants. For information on the Canadian side, the Hydro-Electric Power Commission of Ontario was contacted.

The pertinent water treatment plants and power plants were then contacted individually. In some cases personal visits were possible, but usually contact was by mail. Each potential data source not visited by project personnel was sent a letter outlining the project, its aims and purpose, and the type of cooperation sought. Included with the letter was a three-page questionnaire designed to facilitate the agency's reply. The questionnaire, which is reproduced in Figure 1, is a form on which each observation could be entered, whether hydrographic or meteorological. Space for pertinent information concerning the observation was also provided. It will be noted that a good deal of the information requested on the questionnaire, i.e., time of observation, type of instrument or process, instrument sensing element, and name of observer, are items which were not required under the terms of the study, but were considered pertinent and hence ascertained whenever possible. Information relating to these items was not determined for all cooperating agencies, and is not included in this report. That which is known is on file with the Great Lakes Research Institute.

It should be pointed out here that rigid adherence to a strict policy in contacting and obtaining information from the various agencies was not possible; that is, in some cases the use of questionnaires was impractical, in others they served to collect information that otherwise would likely have been overlooked.

The water treatment plants and power plants constituted the bulk of the hydrographic data sources from which any great variety of data were available. However, a number of additional agencies contacted also were able to make significant contributions. Specific reference to these agencies is made in section 3 of this report.

During the course of the investigation, items of pertinent literature appeared from time to time, and have been included in the Bibliography (Appendix I). Also included in the Bibliography are selected references from a bibliography of the Great Lakes (Van Oosten, John. Great Lakes Fauna, Flora, and their Environment. A Bibliography. Great Lakes Commission, Ann Arbor, Mich., 1957). Selection of these references was based upon applicability to the interest area of the project.

Contained within Van Oosten's bibliography are 138 papers from Lake Erie on subjects within the interest area of this project, 57 from Lake Michigan, 22 from Lake Superior, 19 from Lake Ontario, 13 from Lake Huron, and 42 pertinent to all the Great Lakes. Of these, there are certain papers which cover comparable subjects at different times and which have promise of providing direct material upon possible changes in the Great Lakes.

Figure 1

				Remarks							
			Date_								
	Data	ECORDS		Name of Observer							
	TY OF MICHIGAN RESEARCH INSTITUTE - Great Lakes Collateral Data	QUESTIONNAIRE ON METEOROLOGICAL AND HYDROGRAPHIC RECORDS		Disposi- tion of Data							
* 54597	UNIVERSITY OF MICHIGAN GREAT LAKES RESEARCH INSTITUTE of Interior - Great Lakes Coll	SICAL AND HY		Instrument Sensing Element Exposure Location							
		ME TEOROLOC	Address	Instrumer Ele Exposure							·
	UNIVERSI GREAT LAKES Dept. of Interior	NAIRE ON		Type of Instru- ment or Process							
	u.s.d	QUESTION		Period of Record							
		0		Time of Observa-							
			Organization	Parameter Measured	Air temperature	extremes	Water tempera- ture	extremes	ice forma- tion	ice dissi- pation	

Figure 1 (cont.)

Type of Instrument Sensing Instru- Element ment or Exposure Location Process

Figure 1 (cont.)

							 						<del>                                     </del>
Remarks													
Name of Observer													
Disposi- tion of Data													
Instrument Sensing Element Exposure Location													
Instrumen Ele Exposure													
Type of Instru- ment or Process													
Period of Record													
Time of Period Observa- of tion Record													
Parameter Measured	Pressure	Visibility	Cloud cover	types	heights	Other (specify)		Chemical Analyses	Total alka- linity	Total hard- ness	Hd	Other (speci-fy)	

ırks								i						
Remarks														
Name of Observer														
Disposi- tion of Data														
Instrument Sensing Element Exposure Location														
Instrumen Ele Exposure														
Type of Instru- ment or Process														
Period of Record														
Time of Observa- tion	12													
Parameter Measured	Physical Analyses	Turbidity	Color	Odor	Other (speci- fy)	Biological Analyses	Standard plate count	Coliform	Plankton	Water level	Water currents	Wave heights	Other (specify)	

The bibliography appended to the report does not represent, and is not intended to represent, an exhaustive compilation of all literature pertinent to hydrographic and meteorological aspects of the Great Lakes. It is included for the convenience of the reader, as a compilation of pertinent literature that has come to the attention of the investigators during the course of this study.

#### COMPILATION OF INFORMATION

Most of the information relating to sources of data is of such nature that it can be readily tabulated. In Table 1 are listed sources of hydrographic and/or meteorological data that are located on the periphery of the Lakes. All meteorological stations located no farther than two miles from the lake shore are included in this table. Entries have been listed geographically, proceeding counterclockwise around each Lake, as noted in the table.

In Table 2 are listed all those sources of meteorological data occurring within the Great Lakes drainage basin but located more than two miles from the nearest Great Lake. Geographical listing by state or province is shown. It is not feasible in Table 2 to list each station geographically, hence items have been entered alphabetically by state or province. Individual stations may be located by use of the included coordinates.

To facilitate geographical orientation, a series of six orientation plates have been included, five within Table 1 and one preceding Table 2. Figures 2 through 6 depict the five Lakes: Superior, Michigan, Huron, Erie, and Ontario. The St. Marys River appears in Figure 2, and the St. Clair River, Lake St. Clair, Detroit River, and Niagara River in Figure 6. Figure 7 shows the entire area of the Great Lakes drainage basin. All meteorological sources within this basin that have been ascertained by the present research are listed, partly in Table 1 and in all of Table 2; all hydrographic data sources on the periphery of the Lakes are listed as part of Table 1. In addition, station circles are shown in Figure 7 outside the drainage basin periphery. These are meteorological stations that are in close proximity to the basin periphery. They are listed as part of the present research since there are frequent occurrences where suitable data sources close to the periphery, but within the basin, are not available.

Table 3 contains all those sources which, for specified reasons, had no usable data, or so few that they were considered unsuited to the purposes of this study.

#### 4. SOURCES OF DATA

#### Table 1. Onshore Data Resources

#### A. Pagination

The large volume of information pertinent to each data source has necessitated the use of two pages for each source. These appear on facing pages which are numbered consecutively. The information is presented in eight groups (five Lakes, three connecting waterways) beginning with Lake Superior and proceeding eastward. Data sources are listed geographically within each group beginning at an arbitrary point and proceeding counterclockwise around each Lake or through each of the waterways.

Each data source location is numbered serially within its group, the number appearing in the first column of each facing page. Numbers identify the location on the second page where designation by name has been omitted.

# B. Agency and Contact

In column 3, Agency refers to the particular organization which obtains data at the specific location designated in column 2; Contact refers to the person within the organization who should be consulted in regard to any data recorded.

In the tabulations a contact is not given for stations whose records are available from some central compilation office. Agencies included in this category are as follows:

- 1. U. S. Weather Bureau First Order, Second Order and Cooperative stations, U. S. Naval Air Stations, and U. S. Air Force Bases. Data from these agencies are filed with and obtainable from the National Weather Records Center, Asheville, North Carolina.
- 2. Canadian Meteorological Division Class  $\underline{I}$ ,  $\underline{II}$ ,  $\underline{III}$ , and  $\underline{c}$  stations. Data from these agencies are filed with and obtainable from the Climatological Section, Meteorological Division, Department of Transport, Toronto, Ontario.
- 3. U. S. Lake Survey water level records. Data are obtainable from the U. S. Lake Survey Office, 630 Federal Building, Detroit 26, Michigan.
- 4. Canada Hydrographic Service water level records. Data are obtainable from the Dominion Hydrographer, Canadian Hydrographic Service, Canada Department of Mines and Technical Surveys, Ottawa, Ontario.
  - 5. U. S. Coast Guard installations. With respect to collection of

meteorological and lake state data, Coast Guard installations are divided into two categories: those making regular reports every six hours to the U.S. Weather Bureau, and those which take four-hourly observations; most of the latter are retained by the Coast Guard.

Data from the former category are obtainable from the National Weather Records Center at Asheville, and from the latter are obtainable from U. S. Coast Guard Headquarters, Washington, D. C. Coast Guard station personnel retain copies of the meteorological logs for a period of twelve months; hence, data for any immediately preceding year may be obtained directly from the station in question. In Table 1, the sixhourly and four-hourly stations are so designated.

- 6. Naval Air Stations; U. S. Air Force Bases. Data are filed with and obtainable from the National Weather Records Center at Asheville.
- 7. Michigan municipal water treatment plants. All plant records are filed with the Michigan Department of Health. Information on Upper Peninsula plants may be obtained from the Michigan Department of Health, 19th Street and 13th Avenue North, Escanaba, Michigan. Information on Lower Peninsula plants is obtainable from the Michigan Department of Health, Division of Engineering, Lansing 4, Michigan.

In Column 3 of Table 1, contacts for Michigan water treatment plants are indicated by either <u>Escanaba</u> or <u>Lansing</u>, to specify the data location.

# C. Modification of Contact Procedure

In regard to municipal water treatment plants located in Ohio, a modified contact procedure is recommended. Chemical data obtained at the plants are filed with the Ohio State Department of Health at Columbus, but some physical data may be retained at plants and may be obtained directly from the individual plant operators. Initial inquiries should be addressed to the Chief Engineer, State Department of Health, 301 Ohio Departments Building, Columbus, Ohio.

In Column 3 of Table 1, contacts for Ohio water treatment plants will indicate the name of the superintendent of the plant, followed by Columbus.

#### D. Period of Record

The number of years over which records are available has been ascertained for a large number of the located data sources. Under the period of record for a particular agency, a specific date followed by a dash indicates that data are available from that year to the present. Records pertaining to U. S. Weather Bureau First and Second Order and Cooperative stations indicate the amount of data available in terms of total years. These are not necessarily consecutive years; hence, ascertainment of any missing record is accomplished only by examination of the complete history of the station in question. Accordingly, periods of record for U. S. Weather Bureau stations are entered in Table 1 as total years of data, and specific dates are not given.

An index and period of record listing for CMD stations in Ontario were made available to the project subsequent to the publication date. The index has been appended to this report as Appendix II; however, since the data had already been summarized for this report, Tables 1-5 and Figures 2-9 have not been changed to fit the new information in Appendix II. Footnotes have been added at applicable points to Tables 1 and 2 to call attention to this fact.

Information of the lengths of records of U. S. Coast Guard installations is not readily available, but may be obtained for four-hourly stations from the Coast Guard Headquarters at Washington, D. C., and for six-hourly stations from the National Weather Records Center at Asheville.

Water level records obtained from gaugings of the U. S. Lake Survey and Canadian Hydrographic Service are available back to 1860 for each Lake and for connecting waterways. The single exception is the St. Clair River, for which records are available back to 1898.

The water level records are regularly published as monthly means, in both tabular and hydrograph form, for each Lake taken as a unit. Records for individual gauges are available only upon specific request. Periods of record vary among individual gauges, and hence the date 1860 does not necessarily refer to any particular gauge, but rather to average values for each Lake.

• United States water level data are available from the U. S. Lake Survey, U. S. Army Corps of Engineers, 630 Federal Building, Detroit 26, Michigan.

Canadian water level data are available from the Dominion Hydrographer, Canadian Hydrographic Service, Canada Department of Mines and Technical Surveys, Ottawa, Ontario.

, The periods of record for some sources may vary internally, that is, different observations have been carried out for varying lengths of time. In such cases the notation "variable--see data" has been entered in the <u>Period of Record</u> column, and the appropriate dates have been entered in the individual parameter columns. In some of these cases, the period of record is known for some data, but not for others. In this event, observations known to be taken, but for which the period of record is unknown, are indicated by "(X)".

The symbol "X" (not enclosed by parentheses) is used in two instances, 1) whenever it is known that the period of record is homogeneous for the observations taken; that is, whenever there is a single known period of record which embraces all the observations made at the particular station, and 2) whenever it is known that observations are made at the station, but the period of record is not known for any of them.

Unmarked spaces in Table 1 indicate that, so far as it is known to the investigators, no observations are made of that parameter.

## E. Data

Many meteorological data are obtained by U. S. Weather Bureau First and Second Order stations, Canadian Meteorological Division Class I stations, U. S. Coast Guard installations, U. S. Naval Air Stations, and U. S. Air Force Bases. The distinctions between U. S. Coast Guard Stations, as far as their meteorological observations are concerned, are made on page 15. U. S. Naval Air Stations and Air Force Bases are equipped and staffed to record the data called for by WBAN (Weather Bureau-Air Force-Navy) Form 10; hence, for the purposes of this report, they are placed in the same classification as U. S. Weather Bureau First and Second Order stations.

The distinctions between U. S. Weather Bureau First and Second Order stations are as follows: First Order stations are staffed by full-time Civil Service personnel. The stations may or may not operate 24 hours per day, they may or may not be equipped with full instrumentation, hence they may or may not take special or synoptic observations. Those First Order stations that do not operate at all times or take full observations are functionally important in the work of the Bureau; there are only one or two included in this report. Second Order stations are staffed by certificated personnel to take full synoptic weather observations; they may or may not be Civil Service personnel. Examples of Second Order stations are U. S. Coast Guard Stations and Civil Aeronautics Administration communications stations at airports otherwise without Weather Bureau personnel.

A substation of the U. S. Weather Bureau is staffed by a volunteer individual or organization to make at least one observation per day. He is furnished with equipment to record precipitation and/or temperature extremes; he may or may not have equipment for measuring additional weather elements. This type of data source is referred to in this report as a <u>USWB Cooperative</u>.

The Canadian Meteorological Division Class  $\underline{II}$  station also fits this description. Canadian Class  $\underline{III}$  stations are equipped only with a rain gauge; Canadian  $\underline{c}$  stations are equipped only with a sunshine recorder and/or an anemometer. These stations are referred to in this report, respectively, as  $\underline{CMD}$   $\underline{I}$ ,  $\underline{CMD}$   $\underline{II}$ , and  $\underline{CMD}$   $\underline{c}$ .

To avoid lengthy repetition of citing the data in the tabulations that are recorded by USWB First and Second Order stations, CMD Class I stations, and U. S. Coast Guard, Naval Air, and Air Force stations, the parameters taken by each group are specified below. In Table I, a page and paragraph reference is given in the Other column under Meteorological Data, referring to the following parameters measured at each station:

U. S. Weather Bureau First and Second Order stations,
 U. S. Naval Air Stations, U. S. Air Force Bases, and
 Canadian Meteorological Division Class I stations:

ceiling height
sky condition
visibility
present weather
obstructions to vision
sea level pressure
dew point

wind direction
wind speed
air temperature
cloud types\*
precipitation
barometric tendency
unusual phenomena

\* Canadian Class I stations report cloud types in tenths of total sky covered; many record sunshine.

#### 2. U. S. Coast Guard installations

a. Six-hourly reporting stations (data transmitted to U. S. Weather Bureau every six hours):

sky cover
wind direction
wind speed
visibility
present weather
obstructions to vision
past weather
waves, direction from
wave period
wave height

ice, kind
ice thickness
ice, effect on navigation
ice, change
air temperature
temperature, wet bulb
water temperature
sea level pressure
unusual phenomena

b. Four-hourly reporting stations (data retained at Coast Guard Headquarters, Washington, D. C.):

wind direction
wind speed
sea level pressure
air temperature
humidity
water temperature

present weather cloud types cloud direction cloud speed lake state

## F. Second Page

The "second pages" of Table 1 are pertinent only to those installations which obtain hydrographic data. However, in order to maintain proper continuity, the serial numbers of <u>all</u> data sourcs, both meteorological and hydrographic, are entered on this page.

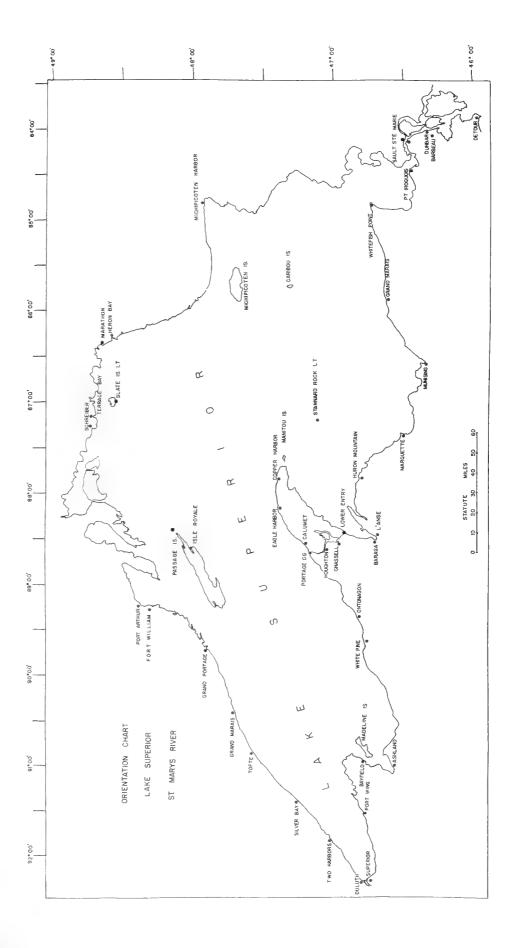
The second column indicates the position in the Lake of the raw water intake. The first number refers to the distance (in feet) that the intake is located from the shore. The second number, enclosed in parentheses, indicates the depth of the intake below the surface of the water in feet. This indicated depth must be taken as only an approximate figure in most cases, due to the difficulty in ascertaining the actual reference level used in computing the depth. It is usually the depth below mean lake level.

# G. U. S. Public Health Service Special Study

Certain water treatment plants on Lake Michigan are of particular interest in connection with a special study presently being conducted by the U. S. Public Health Service through its Chicago (Region V) offices. This study was prompted by the difficulty of many Lake Michigan plants to obtain effective water filtration, due primarily to intense seasonal plankton blooms. A portion of this study involves the identification of water quality conditions which contribute to the difficulty of obtaining proper filtration runs. In this connection, efforts are being made to standardize observation techniques utilized in the determination of chemical, physical, and biological characteristics of the raw water taken in by the various plants.

The study is at present designed to extend through, and possibly beyond, 1958. During the period of the study, all participating plants will make the following observations, using a standard methodology prescribed by the U. S. Public Health Service: water temperature, air temperature, weather conditions, wind direction, wind speed, lake surface current direction, turbidity, pH, alkalinity, chlorine demand, and chlorine residual. Many of the cooperating plants obtained these observations prior to the initiation of the special study; a few expanded their operations to include them at least through the present year.

Water treatment plants are involved at the following locations: Green Bay, Wisconsin; Sheboygan, Wisconsin; Milwaukee, Wisconsin; Waukegan, Illinois; Evanston, Illinois; Chicago (South District Filtration Plant), Illinois; Gary-Hobart, Indiana; Michigan City, Indiana; Benton Harbor, Michigan; Holland, Michigan; Grand Rapids, Michigan; and Muskegon, Michigan. These plants are identified in Table 1 in the remarks column by the notation USPH cooperator.



Orientation Chart, Lake Superior and St. Marys River Figure 2.

Table 1. Onshore Data Sources

	LAKE SUPERIOR (beginning	; at international boundary and proceeding counterclockwise)	and procee	eding co	unterc]	lockwise)		
			Poriod		Me	Meteorological Data	cal Dat	ra .
° NO	Location	Agency and Contact	of Record	Wind Dir.	Spee	Air Temp.	Pcpn.	Other
	Grand Portage, Minn.	USWB cooperative	8			×	×	
7	Grand Marias, Minn.	USCG Rock of Ages Light (4 hrly)	i i	×	×	×		p 15, 2b
<u>е</u>	Grand Marias, Minn.	USCG North Superior Life- boat (6 hrly)	8	×	×	×		p 15, 2b
4	Grand Marias, Minn.	USWB cooperative	50			×	×	
2	Tofte, Minn.	USWB cooperative	16			×	×	
9	Silver Bay, Minn.	Reserve Mining Co. E. W. Davis	variable see data	1955-	1955-	1955-		pressure, 1955-
	Silver Bay, Minn.	Water treatment plant A. A Jensen, Supt.	variable see data	1955-	1955-	1955-		
∞	Two Harbors, Minn.	Water treatment plant R. W. Gustavson, City Clerk	ŀ					
6	Two Harbors, Minn.	USCG Two Harbors Light (4 hrly)	!	×	×	×		p 15, 2b
10	Two Harbors, Minn.	USCG Split Rock Light (4 hrly)	!	×	×	×		p 15, 2b

_	Remarks													
	Orbor	orne.						plankton (once/ year), 1956- lake level 1954	lake level 1955					
	Bacteria	Total												
ata		Coli.												
aphic D	Hard							1955-				_		
Hydrographic Data	Turb							1956-	1954-	(X)				
	Ho							1955-						
	Alk							1955-						
	temp.	Treated		-										
	Water	Raw						195'5-	1954-	(x)				
Intake	location	(IE)						(80 (50)	525 (52)	!				
	No.		-	2	ю	7	ς.	9	7	∞	6	10		

							<u> </u>						
ra Ta	Other				p 15, 2b	p 15, 2a	p 15, 1	weather					р 15, 2b
cal Dat	Pcpn.	×					×				×	×	
Meteorological Data	Air Temp.	×			×	×	×	×			×	×	×
Met	Speed				×	×	×						×
	Wind Dir.				×	×	×						×
Doring	of Record	65	0	1948-	:	;	80	!	1	1942-	20	12	ı
	Agency and Contact	USWB cooperative	U. S. Lake Survey	Water treatment plant A. V. Biele, Chemist	USCG Lifeboat (4 hrly)	USCG Superior Entry Life- boat (6 hrly)	USWB First Order	Minnesota Power & Light Co. Hubbell Carpenter, Vice Pres. & Ch. Engr.	U. S. Lake Survey	Superior Water, Light, and Power Co. W. R. Olsen, Ch. Engr.	USWB cooperative	USWB cooperative	USCG Devils Island Light (4 hrly)
	Location	Two Harbors, Minn.	Two Harbors, Minn.	Duluth, Minn.	Duluth, Minn.	Duluth, Minn.	Duluth, Minn.	Duluth, Minn.	Duluth, Minn.	Superior, Wisc.	Superior, Wisc.	Port Wing, Wisc.	Bayfield, Wisc.
	No.	11	12	13	14	15	16	17	18	1.9	20	21	22

1	Remarks			Plankton stud-	1939, 40, 41										
	Other		lake level (cont.)	NH3, Diss. 02, Total Fe. BOD.	Plankton (see remarks)					lake level (cont.)					
	ria	1010													
	Bacteria								·	-					
ic Data	Hard.			×					_						
Hydrographic Data	Turb.			×				·····							
Hyd	Hď			×											
	Alk.			×											
	temp.														
	Water			×							×				
Intake	location (ft)			1500 (65)							slip at shoreline, 12 ft deep				
	No.	11	12	13		14	15	16	17	18	19	20	21	22	

	Remarks								intake water artificially heated in					
	Other										color, 1952 fluoride, 1955	•		
	ria													
æ	Bacteria Coli. Tot							(X)			1952-			
hic Dat	Hard.										1954-			
Hydrographic Data	Turb.										1952-			
H	hЧ										1954-			
	Alk.										1954-			
	temp.													
	Raw							(X)	(x)		1955-			
Intake	location (ft)							2000 (22)	slip on W. side of plant		(30)			
	No.	23	24	25	26	27	28	29	30	31	32	33	34	

	14 0)	2a	2b			2a		2b	2b					
	Other	p 15,	p 15,			p 15,		p 15,	р 15,					
cal Data	Pcpn。						×				×			
Meteorological Data	Air Temp.	×	×			×		×	×					
Mete	a l	×	×	1955-	×	×		×	×			×		
	Wind Dir. S	×	×	1955-	×	×		×	×			×	1950-	
•	Period of Record	t 1	8	variable see data	1955-	â B	16	t s	!	:	16	1955-	variable see data	
	Agency and Contact	USCG Lifeboat (6 hrly)	USCG Houghton-Keweenaw Light (4 hrly)	Calumet & Heckla water treatment plant (Escanaba)	Tamarack water treatment plant (Escanaba)	USCG Light (6 hrly)	USWB cooperative	USCG Light (4 hrly)	USCG Light (4 hrly)	U. S. Lake Survey	USWB cooperative	Water treatment plant (Escanaba)	Water treatment plant (Escanaba)	
	Location	Portage, Mich.	Houghton-Keweenaw, Mich USCG Houghton-Keweenaw Light (4 hrly)	Calumet, Mich.	Calumet, Mich.	Eagle Harbor, Mich.	Copper Harbor, Mich.	Manitou Island, Mich.	Keweenaw (Chassell), Mich.	Lower Entry, Mich.	Baraga, Mich.	Baraga, Mich.	L'Anse, Mich.	
	No.	35	36	37	38	39	40	41	42	43	777	45	94	

	Remarks			weekly temps	1950-; weekly coli. 1950-		ty and colliorm 1950-							hourly temps,	thermometer	
	Other											lake level	(tri-daily)		color, 1956-	
	Bacteria i. Total															
ata	Bac Coli.			1955-		×								×	1955-	
aphic D	Hard.															
Hydrographic Data	Turb.			1956-		×									1956-	
	ЬН														1956-	
	Alk.															
	temp. Treated						_									-,
	Water Raw			1955-		×								×	1954-	
Intake	location (ft)			900 (12)		350 (16)								(16)	1000 (48)	
	No °	35	36	37		38		39	40	41	42	43	77	45	97	47

			Period		Met	Meteorological Data	cal Dat	col
No °	Location	Agency and Contact	of Record	Wind Dir. Sp	Speed	Air Temp.	Pcpn.	Other.
48	Huron Mountain, Mich.	USWB cooperative	8 8				X	
64	Stannard Rock, Mich.	USCG Light (4 hrly)	8 8	×	×	×		p 15, 2b
20	Marquette, Mich.	USWB First Order	87	×	×	×	×	p 15, 1
51	Marquette, Mich.	USCG Passage Island Light (6 hrly)	8 8	×	×	×		p 15, 2a
52	Marquette, Mich.	U.S. Lake Survey	đ đ					
53	Marquette, Mich.	Northern Mich. Coll. of Ed., Geography Dept.	8 8			×	×	pressure, rel.
54	Marquette, Mich.	Water treatment plant (Escanaba)	variable see data			1953-	-	
55	Marquette, Mich.	Cliffs Dow Chemical R. W Jenner, Vice Pres. and Gen. Mgr.	1957-					
26	Marquette, Mich.	USCG Lifeboat (4 hrly)	8	×	×	×		p 15, 2b
57	Munising, Mich.	USWB cooperative	62			×	×	
28	Munising, Mich.	Water treatment plant (Escanaba)	1955-	×		×		
59	Munising, Mich.	Munising Paper Co. P. A. Haag, Plant Engr.						
09	Munising, Mich.	USCG Lifeboat (4 hrly)	1	×	×	×		р 15, 2b

		Remarks							recording thermograph								
		Other					lake level (cont.)										
	Bacteria	Total															
a		Coli.							1951-				×				
Hydrographic Data	A second	Hard.															
drograpi		Turb.							1953-								
Нус		Hd							1955-								
		Alk.				-											
	temp.	Treated															
	Water	Raw							1953-	×			×	×			
Intake	location	(ft.)							1000 (68)	700 (20)			(50)	(450 (40)			
	O Z		87	67	20	51	52	53	54	55	99	57	58	59	09		

			7		Met	Meteorological Data	cal Dat	ct.
No .	Location	Agency and Contact	reriod of Record	Wind Dir.	Speed	Air Temp.	Pcpn.	Other
61	Au Sable (Grand Marais), Mich.	USCG Light (4 hrly)	Cal dep	×	×	×		p 15, 2b
62	Grand Marais, Mich.	USCG Lifeboat (4 hrly)	90	×	×	×		p 15, 2b
63	Whitefish Point, Mich.	USWB cooperative	variable see data			67	51	
64	Whitefish Point, Mich.	USCG Light (6 hrly)	1	×	×	×		р 15, 2а
65	Caribou Island, Ont.	Canada Dept. of Transport (lighthouse) CMD II	variable see data	16	16	53	53	sunshine 14, weather
99	Michipicoten Harbor, Ont.	Canadian Hydrographic Service	<b>8</b>					
29	Heron Bay, Ont.	CMD II	*			×	×	
89	Marathon, Ont.	CMD II	* *			×	×	
69	Marathon, Ont.	Marathon Paper Co. Colin MacMillan	1947-			×	solid cover only	pressure, 1954
70	Slate Island, Ont.	Canada Dept. of Transport (lighthouse)	8 8	×	×			weather
71	Terrace Bay, Ont.	Kimberly-Clark Paper Co. J. Wade, Tech. Supt.	variable see data					
72	Schreiber, Ont.	CMD II	1909-			49	49	(cloud cover)

\*\* See Appendix II, p. 160.

	Remarks									chem data a- vailable from J.F.J. Thomas.	Head, Ind. Wa- ters Sec., Ind. Mins. Div., Dept. Mines &	Tech. Surveys, Ottawa, Ont.		
	Other									Ca,Mg,Fe,Cl,SO4, 1/mo.			plankton, 1955	
	eria Total													
æ	Bacteria Coli. Tot									X 1/wk.				
phic Dat	Hard.									X 1/mo.				
Hydrographic Data	Turb.									X 1/mo.				
H	ЬН									X 1/mo.				
	Alk.												55-56	
	temp. Treated													
	Water									X hourly			1948-	
Intake	location (ft)									1600 (30)			1600 (34)	
	No.	61	62	63	99	65	99	29	89	69		70	71	72

	Orher	of ice tion; er					2a			
u		date of ic formation; weather		p 15,	· · · · · · · · · · · · · · · · · · ·		p 15,			
cal Data				×	×	×				
Meteorological	Air Temp	×		×	×	×	×			
Met	Wind Speed			×			×		 	
	Dir	×		×			×		 	
	Period of Record	1938-	i	*	18	20	8			
	Agency and Contact	Water treatment plant, Public Utilities Comm., E. A. Vigars, Mgr.	Canadian Hydrographic Service	CMD I	Mott Is. (USWB cooperative	Washington Harbor (USWB cooperative)	USCG Light (6 hrly)			
	Location	Port Arthur, Ont.	Port Arthur, Ont.	Fort William, Ont.	Isle Royale, Mich.	Isle Royale, Mich.	Passage Island, Mich.	See Appendix II, p. 160.		
	No ,	73	74	75	92	77	78	×*		

							 		 · · · · · · · · · · · · · · · · · · ·	
	Remarks									
	Other	complete chemical analysis of raw water made July- August, 1950	water level, wave height							
	ria									
ata	Bacteria Coli. Tot									
Hydrographic Data	Hard.									
Hydrogr	Turb.									
	ЬН							,		
	Alk.									
	Treated									
	Water Raw 1	×								
Intake	location (ft.)	2400 (25)		-						
-	No.	73	74	75	77	78	 		 	

ST. MARYS RIVER	YS RIVER Location	Agency and Contact	Feriod of Record	Wind		1 4	cal Data	a Other
Sault Ste. Marie, Mich.	ch	. Water treatment plant	variable	1955-	1955~			(ice thick-
		(Escanaba)	see data					ness)
Sault Ste. Marie, Mich.	, C	. USWB First Order	70	×	×	×	×	p 15, 1
Sault Ste. Marie, Mich.	4	USCG Lansing Shoal Light (6 hrly)	3 8	×	×	×		p 15, 2a
Sault Ste. Marie, Mich.	c	U. S. Lake Survey	!					
Sault Ste. Marie, Ont.		CMD II	*			×	×	
Sault Ste. Marie, Ont.		CMD II (Insectary)	*			×	×	
Sault Ste. Marie, Ont.		Canadian Hydrographic Service	t e					
Point Inoquois (Brimley), Mich.		USCG Light (4 hrly)	;	×	×	×		p 15, 2b
Point Iroquois, Mich.		U. S. Lake Survey	ŀ					
Little Rapids Cut (Sault Ste. Marie), Mich.		USCG Light Attendant (4 hrly)	!	×	×	×		р 15, 2b
Middle Neebish Cut (Barbeau), Mich.		USCG Light Attendant (4 hrly)	E P	×	×	×		p 15, 2b
		_	-	_				

\*\* See Appendix II, p. 160.

Intake -	Water	r temp.			Hydrogr		ata	2		Remarks
	Raw	$\mathbf{I} = \mathbf{I}$	Alk.	Hd	Turb.	Hard.	Coli. Tota	Total	Other	
	(X)				1950-		1950-			coli, on daily basis only
										since 1957
										period of rec- ord not en-
										tirely ascer- tained
									water level (cont.)	
		<u>.</u>							water level	
									water level (cont.)	

ra d	Other		p 15, 2b	p 15, 2b							
cal Dat	Pcpn	×			×		·				
Meteorological Data	Air Temp.	X	×	×							
Met	nd Speed		×	×							
	Wind Dir.		×	×				_			
D	of Record	16	В	B 8	28	8					
	Agency and Contact	USWB cooperative	USCG Light (4 hrly)	USCG Light Attendant (4 hrly)	USWB cooperative	U. S. Lake Survey					
	Location	Dunbar, Mich.	Detour, Mich.	Detour, Mich.	Detour, Mich.	Detour, Mich.					
	No °	12	13	14	15	16					

							-						
	Remarks												
	Other				water level	(-0111-)							
Data	Bacteria Coli. Total					<u>-</u>	<del> </del>	<del></del>	·			· · · · ·	
Hydrographic Data	. Hard.												
Hyd	Turb.												
	Нď												
	Alk.							·					
	Water temp.												
								··· <del>·</del>	-	 	-15	_	
Intake	location (ft)												
	No.	12	13	15	16								

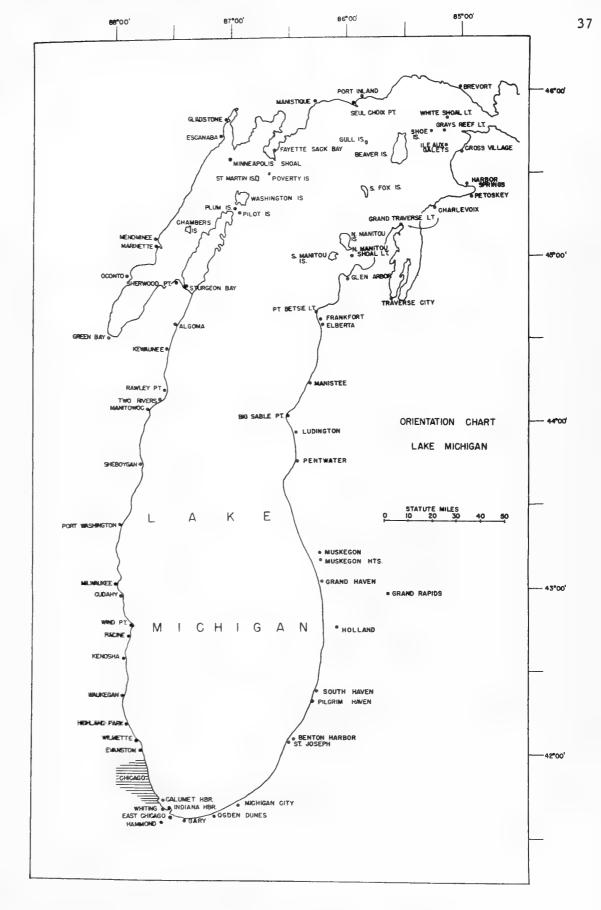


Figure 3. Orientation Chart, Lake Michigan

Straits of Mackinac and proceeding counterclockwise)	Data	on. Other			p 15, 2b		p 15, 2b			P 15, 1	p 15, 2b		p 15, 2b	ca ice formation 1880- & dissipation ca 1880-	p 15, 2b
eding cou	Meteorological	Pc	X	×		×		×	-5	×		1946-			
nd proce	Meteor	Air Speed Temp		<del></del>	× ×	×	× ×	×	1935-	× ×	× ×	1957-	×	ca 1880-	×
Mackinac ar		Wind Dir. Spe			×		×		(x)	×	×	1953- 19	×	ca 1880—	×
Straits of	Period	of Record	5	2	i i	22	8 B	38	variable see data	87	ŝ ŭ	variable see data	!	variable see data	1
north shore at the		Agency and Contact	USWB cooperative	USWB cooperative	USCG Light (4 hrly)	USWB cooperative	USCG Light (4 hrly)	USWE cooperative	Water treatment plant (Escanaba)	USWB First Order	USCG Light (4 hrly)	Water treatment plant (Escanaba)	USCG Light (4 hrly)	Water treatment plant	USCG Light (4 hrly)
LAKE MICHIGAN (beginning on the		Location	Brevort, Mich.	Port Inland, Mich.	Seul Choix Point (Gulliver), Mich.	Manistique, Mich.	Manistique, Mich.	Fayette Sack Bay, Mich. USWB	Gladstone, Mich.	Escanaba, Mich.	Escanaba, Mich.	Escanaba, Mich.	Minneapolis Shoal, Mich USCG	Menominee, Mich.	13 Menominee, Mich.
T I		No °	1	2	3	4	5	9	7	∞	6	10	11	12	13

Hydrographic Data	Turb, Hard, Bacte	10131						1954-			53- 1954- 1953- 1948- 1948- odor, 1948-; color, 1948-		45- 1945- (X) 1945- color, 1945-	
	1 1									·. <u>-</u>				
Data		000						1954						
				_										
Hydroen	Turb						٠				1954-		1945-	
	Hd										1953-		1945-	
	Alk.										1953-		1951-	
	temp.													
	Water	AD						1955-			1953-		1945-	
Intake	location (ft)							1500 (35)			()		conflict: ing info.	
	No.		2	3	4	5	9	7	œ	6	10	11	12	

_													
ta	Other				weather	p 15, 2b	p 15, 2b		p 15, 2b	p 15, 2b	p 15, 2b	p 15, 2b	p 15, 2b
ical Da	Pcpn.		×	48									
Meteorological Data	Air Temp.		×	69	×	×	×		×	×	×	×	×
Me	Wind Speed				×	×	×		×	×	×	×	×
	W Dir.				×	×	×		×	×	×	×	×
Period	of Record		70	variable see data	1957-	1	[	8	i i	ŀ	1	1	!
	Agency and Contact	Water treatment plant	USWB cooperative	USWB cooperative	Water treatment plant A. Marx, Chemist	USCG Light (4 hrly)	USCG Light Attendant (4 hrly)	U. S. Lake Survey	USCG Light (4 hrly)	USCG Light (4 hrly)	USCG Lifeboat (4 hrly)	USCG Light (4 hrly)	USCG Light (4 hrly)
	Location	Marinette, Wisc.	Marinette, Wisc.	Oconto, Wisc.	Green Bay, Wisc.	Green Bay, Wisc.	Green Bay, Wisc.	Green Bay, Wisc.	Sherwood Point (Sturgeon Bay), Wisc.	Chambers Island (Fish Creek), Wisc.	Plum Island, Wisc. (c/o Washington Is.)	Pilot Island (Washing- ton Is.), Wisc.	St. Martin Island (Washington Is.), Wisc.
	No.	14	15	16	17	18	19	20	21	22	23	24	25

	Remarks					intake in L.	Michigan ap-	prox. 3 mi N	USPH coopera-	tor										
	Other	Oches											,	lake level (cont.)	***					
	rta	Total			_	×														 
ata	Bacteria	Colf.				×														
Hydrographic Data	Hard	3				×														
Hydrogr	Turb					×														
	На	<u>.</u>				×														
	Alk					×														
	temp.	Treated																		-
	Water	Raw				×														
Intake	Location	(£t)				(42) (6009														
	°°CN		14	1.5	16	17					18	19	ć	07	27	22	23	24	25	

	e.r	2b			2b		2b		2b	2b		2b	2b	
	Other	15,			15,		15,		15,	15,		15,	15,	
w l		D.			<u> </u>	-	Д		Ъ	۵		Д	Д	
ical Da	Pcpn.		×	54				×			∞		-	96
Mereorological Dara	Air Temp	X	×	61	×		×	×	×	×	∞	×	×	75
Me	Vind Spee	X			X		×		×	×		×	×	
	Dir	×			×		×		×	×		×	×	
7 7 2	reriod of Record	3	14	variable see data	8 8	je 8	A B	95	e 8	t .	variable see data	5 8	3 8	variable see data
	Agency and Contact	USCG Light (4 hrly)	USWB rooperative	USWB cooperative	USCG Lifeboat (4 hrly)	U. S. Lake Survey	USCG Light (4 hrly)	USWB cooperative	USCG Light (4 hrly)	USCG Light (4 hrly)	Water treatment plant (USWB cooperative)	USCG Lifeboat (4 hrly)	USCG Light (4 hrly)	USWB cooperative
	Location	Poverty Is. (Washington Is.), Wise.	Washington Is., Wisc.	Sturgeon Bay, Wisc.	Sturgeon Bay, Wisc.	Sturgeon Bay, Wisc.	Algoma, Wisc.	Kewaunee, Wisc.	Kewaunee, Wisc.	Rawley Point (Two Rivers), Wisc	Two Rivers, Wisc.	Two Rivers, Wisc.	Manitowoc, Wisc.	Manitowoc, Wisc.
	No .	26	27	28	29	30	31	32	33	34	35	36	37	38

		1													 	
	Remarks															
	Other					lake level (cont.)										
	ria															
Data	Bacteria Coli, Tot									-						
aphic D	Hard。															
Hydrographic	Turb,										1933-					
	ЬН										1933-					
	Alk.										1933-			··········		
	r temp. Treated															
	Water										1933-					
Intake	location (ft)										6123 (33)					
	No.	26	27	28	29	30	31	32	33	34	35	36	37	38		

_			7 C		M	Mereorological Data	al Data	
1	Location	Agency and Contact	of Record	Wind Dir. S	Speed	Ai: Temp.	Pcpn.	Other
03	Sheboygan, Wisc.	Water treatment plant C. Blabaum, Plant Supt.	1931	×	×	×		weather, lake
								current dir. during 1958
	Sheboygan, Wisc.	USCG Lifeboat (4 hrly)	8 6	×	×	×		p 15, 2b
	Sheboygan, Wisc.	USWB cooperative	variable see data			62	09	
	Port Washington, Wisc.	Water treatment plant	1949~	×		×		
	Port Washington, Wisc.	USCG Light (4 hrly)	8	×	×	×		p 15, 2b
	Port Washington, Wisc.	USWB cooperative	19				×	
	Milwaukee, Wisc.	Water treatment plant T. E. Dolan, Chemist	variable see data	1958	1958	1958		weather, lake current dir. 1958
	Milwaukee, Wisc.	USWB cooperative	7			×	×	
	Milwaukee, Wisc.	USCG Lifeboat (6 hrly)	1 1	×	×	×		p 15, 2a
	Milwaukee, Wisc.	USWB First Order City	84	×	×	×	×	p 15, 1
	Milwaukee, Wisc.	U. S. Lake Survey	į					
	Cudahy, Wisc.	Water treatment plant J. J. Tiry, Director Pub. Works	1954-	×	×	×		
-			_		_			

	Remarks		5000 ft intake used most	tor						USPH coopera-	100					
	* O 4 + O	Orner								plankton				lake level		
	eria	Total					×			×					×	
Data	Bacteria	Coli.					×			×					×	
Hydrographic Data	Lord	паги														
Hydrog	Turk	TOTO	×				×			×					×	
	на	pii	×				×			×					×	
	412	DIR.	×				×			×					×	
	temp.	Treated											<del></del>			
	Water	Raw T	×				×			×			· · · · · · · · · · · · · · · · · · ·		×	
	location	(ft)	<u></u>				(32)			(67)					2400 (24)	
-  -			5000				3450			6500					2400	
	No.		39		40	41	42	43	44	45	94	47	48	64	50	

						Meteorological		Data
No.	Location	Agency and Contact	Period of Record	Wind Dir. S	nd Speed	Air Temp.	Pcpn,	Other
51	Wind Point, Wisc.	USCG Light (4 hrly)	8	X	X	×		p 15, 2b
52	Racine, Wisc.	Water treatment plant G. H. Ruston, Mgr.	1930-	×		×	×	
53	Racine, Wisc.	USWB cooperative	variable see data			65	62	
54	Kenosha, Wisc.	USCG Lifeboat (4 hrly)	8 8	×	×	×		p 15, 2b
55	Kenosha, Wisc.	USWB cooperative	16			×	×	
56	Waukegan, Ill.	North Shore Sanitary Dist., R. E. Anderson, Chem-Engr. (a) Waukegan Disposal Plant	variable see data	1947-			liquid 1938-; solid	cloud cover 1947-48
57-	Waukegan, Ill.	(b) 20 obs. pts. between Wisc. & Cook Co., Ill., borders	1948-	×	×		1947-	weather, lake condition
77	Waukegan, Ill.	Water treatment plant H. C. Domke, Supt.	1928-	×	×			atmos. cond. lake level
78	Waukegan, Ill.	USWB cooperative	35			×	×	
79	Waukegan, Ill.	USCG Light (4 hrly)	i	×	×	×		р 15, 2b
80	Highland Park, Ill.	Water treatment plant	1929-			×		atmos. cond.

	Remarks							locations of obs. pts. ob-	tainable from R. E. Anderson	USPH coopera- tor				
	0ther													
	Total		×							×			×	
Data	Bacteria Coli, Tot		×					×		×			×	
Hydrographic	Hard.													
Hydrog	Turb.		×	-				×		×			×	
	Нď		×				· · · · · ·	×		×			×	
	Alk.		×				·			×			×	
	temp.													
	Water		×					×		×			×	
Intake	location (ft)		3960 (40)							()			3400 (25) 2000 (25)	
	No.	51	52	53	54	55	95	57-		77	78	79	80	

ta	Other	p 15, 2b			p 15, 1	,					p 15, 2b		p 15, 2b
gical Da	Pcpn.		×	×	×	×	×	×	×	×			
Meteorological Data	Air Temp.	×	×		×	×	×			×	×		×
M	Speed	×	×		×	×				×	×		×
	Wind Dir.	×	×		×	×				×	×		×
D	of Record		1913-	17	88	87	25	1. 25	32	1945-	!	i i	1
	Agency and Contact	USCG Lifeboat (4 hrly)	Water treatment plant H. R. Frye, Supt.	USWB cooperative	USWB First Order City	Chicago Univ. USWB cooperative	Loyola Univ. USWB cooperative	Chicago Lakeview Pump, St. (USWB cooperative)	Chicago Sanitary Dist. Off. (USWB cooperative)	South Dist. Filtration Plt. (USWB cooperative) J. R. Baylis, Engr. of Water Purification	USCG Lifeboat (4 hrly)	U. S. Lake Survey	WSCG Lifeboat (4 hrly)
	Location	Wilmette, Ill.	Evanston, Ill.	Evanston, Ill.	Chicago, Ill.	Chicago, Ill.	Chicago, Ill.	Chicago, Ill.	Chicago, Ill.	Chicago, Ill.	Chicago, Ill.	Chicago, Ill.	Jackson Park (Chicago), Ill.
	o N	81	82	83	84 (	85	98	87	88	68	06	91 (	92

	Remarks		USPH coopera-							USPH coopera-					
	Other		plankton							plankton, lake level					
	Bacteria 1i, Total		×							×	·- · · · · ·				
Data	Bact Coli.		×							×					
Hydrographic Data	Hard.														
Hydrog	Turb.		×							×					
	Hd		×							×					
	Alk.		×							×					
	temp. Treated														
	Water Raw 1		×							×					
Intake	location (ft)		5690 (16)							()					
	No.	81	82	83	84	85	86	87	88	89	06	91	92		

			7 ( ) ( )		M	Meteorological	gical Da	Data
Location		Agency and Contact	rerioa of Record	Wi Dir.	Wind	Air Temp	Pcpn	Other
South Chicago,	, I11.	USCG Lifeboat (4 hrly)	å I	×	×	×		p 15, 2b
Hammond, Ind.		Water treatment plant M. Papach, Act. Supt.	1936-	×	×	×		visibility
Whiting, Ind.		USWB cooperative	78			×	×	
Whiting, Ind.		Water treatment plant M. H. Abraham, Supt.	1955-	×				
Indiana Harbor, Ind.	r, Ind.	USCG Light (4 hrly)	i i	×	×	×		p 15, 2b
Gary, Ind.		USWB cooperative	22			×	×	
Gary, Ind. (Gary-Hobart)		Water treatment plant H. L. Plowman, Jr., Ch. Chem.	1954-	×		×		
Gary, Ind.		U. S. Steel; T. W. Hunter, Gen. Supt.; D. T. Seaman, Div. Supt. of Power & Fuel	variable see data					
Gary, Ind.		Northern Ind. Public Serv. Co., D. H. Mitchell Plant, E. B. Heise, Mgr. Electric Production	Dec. 1956-	×	×	×		
Ogden Dunes,	Ind.	USWB cooperative	7			×	×	
Michigan City, Ind.	, Ind.	Water treatment plant D. Ungareit, Pl. Supt.	1935-	×				atmos. cond.

	Remarks		intakes: 1) used all yr;	2) & 3) used May-Sept.					USPH coopera- tor				2 intakes at	same location; 24" & 42"diam. USPH coopera-
	Other		odor; lake sur~ face						plankton, color, odor	Ca, Mg, non-CO <sub>3</sub> salts, 1953-	unspecified chem. anal.;water level			
	eria Total								×				×	
Data	Bacteria Coli. Tot		×						×				×	
Hydrographic	Hard.							·	×	1953~				
Hydrog	Turb.		×			×			×				×	
	Нď		×						×				×	
	Alk.		×						×				×	
	temp. Treated													
	Raw		×			×			×	1950-	×		×	
Intake	location (ft)		94 1)5000(24) 2)1934(17) 3)1400(15)	(61)00+1(6		1696 (16)			ca 6000 (35-38)	1) 2900 (6-16) 2) 100 (-)	shoreline (6)		3000 (32)	
	No.	93	96		95	96	97	98	66	100	101	102	103	

					<del></del>		-						
ata	Other		p 15, 2b	,	p 15, 2a			pressure	p 15, 2a			pressure	
gical Da	Pcpn.						×	×			×		
Meteorological Data	Air Temp.	×	×		×	×	×	×	×		×		×
λί.	Wind Speed	×	×		×	×		×	×				
	Wi Dir.	×	×		×	×		×	×	×			×
1	Period of Record	1931-	8 1	1952-	i	1951-	75	က	1	1926-	63	1915-	1957-
	Agency and Contact	Northern Ind. Public Serv. Co., Michigan City Plant; E. B. Heise, Mgr. Electric Production	USCG Lifeboat (4 hrly)	Water treatment plant (Lansing)	USCG Lifeboat (6 hrly)	Water treatment plant (Lansing)	USWB cooperative	C. W. Shinn	USCG Lifeboat (6 hrly)	Water treatment plant (Lansing)	USWB cooperative	Municipal power plant Roy Ewers, Mgr.	Water treatment plant (Lansing)
	Location	Michigan City, Ind.	105 Michigan City, Ind.	106 St. Joseph, Mich.	107 St. Joseph, Mich.	108 Benton Harbor, Mich.	109 Benton Harbor, Mich.	110 Pilgrim Haven, Mich.	111 South Haven, Mich.	South Haven, Mich.	South Haven, Mich.	South Haven, Mich.	Holland, Mich.
	No.	104 h	105 1	106	107	108	109 1	110 1	111	112	113	114 8	115

	Remarks					USPH coopera-	tor							USPH coopera- tor	
	Other	unspecified chem. anal., water level		odor		odor					color, odor			plankton, odor, CO <sub>3</sub> , diss.CO <sub>2</sub> , HCO <sub>3</sub>	
	ria Total					×					×			×	
ata	Bacteria Coli. To			×		×					×			×	
Hydrographic Data	Hard.	,				×									
Hydrogr	Turb.			×		×					×			×	
	ЬН					×					×			×	
	Alk.			×		×					×			×	
	remp. Treated														
	Water Raw	×		×		×					×			×	
Intake	location (ft)	shoreline (14)		1500 (25)		3500 (28)					5600 (35)		· ·	4360 (46-50)	
	No.	104	105	106	107	108		109	110	111	112	113	114	115	

			Period		Mete	Meteorological	al Data	es .
No	Location	Agency and Contact	of Record	Wind Dir Sp	l Speed	Air Temp.	Pcpn.	Other
116	Holland, Mich.	USCG Moorings (4 hrly)	1	×	×	×		p 15, 2b
117	Grand Rapids, Mich.	Water treatment plant (Lansing)	1912-					
118	Grand Haven, Mich.	USCG Lifeboat (4 hrly)	8 8	×	×	×		p 15, 2b
119	Grand Haven, Mich.	USWB cooperative	16			<del></del>	×	
120	Grand Haven, Mich.	USWB cooperative	88			×	×	
121	Muskegon Heights, Mich.	Water treatment plant (Lansing)	1941-	×	· · · · · · · · · · · · · · · · · · ·	.;		
122	Muskegon, Mich.	Water treatment plant (Lansing)	1937-			×		
123	Muskegon, Mich.	USWB First Order	62	×	×	×	×	p 15, 1
124	Muskegon, Mich.	USCG Lifeboat (6 hrly)	l I	×	×	×		p 15, 2a
125	Pentwater, Mich.	USCG Moorings (4 hrly)	1	×	×	×		p 15, 2b
126	Ludington, Mich.	Water treatment plant (Lansing)	1954-	×				weather
127	Ludington, Mich.	USWB cooperative	!			×	×	
128	Ludington, Mich.	USCG Lifeboat (4 hrly)	!	×	×	×		p 15, 2b
129	Ludington, Mich.	USWB cooperative	62			×	×	

	Remarks			USPH coopera-	8 )				USPH coopera- tor								
	140	Ocner		plankton, Mg, Cl,				color, odor	F1, C1, color, odor								
	Bacteria	Total		×				×	×								
Jata	Bact	Coli.		×				×	×				×				
Hydrographic Data	Hard	וומדתי		×				×									
Hydrogi	Turb	TOTO.		×				×	×				×				
	1100	lud.		×				×	×								
	Alle	43 £ (1) 0		×				×	×						•		
	temp.	Treated						×									
	ter	Raw		×					×				×				
Intake	location	(ft)		6100 (57)				4600 (42)	7000 (50)				2600 (45)				
	No.		116	117	118	119	120	121	122	123	124	125	126	127	128	129	

			·													
	Remarks															
	Other	lake level (cont.)														
ta	Bacteria Coli Total															
Hydrographic Data	Hard.															
Hydr	pH Turb.															
	Alk.		<del>-</del>													
	er temp. Treated									1					 ,	
	Water														- <del>1</del>	
Intake	location (ft)															
	No .	130	131	.32	.33	34	.35	36	37	.38	39	140	41	42		

			Period		Metec	Meteorological	1 Data		
No. Location		Agency and Contact	of Record	Wind Dir. S	nd Speed	Air Temp.	Pcpn.	Other	
Traverse City, Mich.		Water treatment plant (Lansing)	1954-	al again 100 anns an					
Traverse City, Mich.		USWB Second Order CAA AP	99	×	×	×	×	p 15, 1	
Traverse City, Mich.		Naval Air Station	1942-1945	×	×	×	×	p 15, 1	
Charlevoix, Mich.		USCG Lifeboat (4 hrly)	1	×	×	×		p 15, 2b	
Charlevoix, Mich.		USWB cooperative	71	. · · · · · · · · · · · · · · · · · · ·			×		
Petoskey, Mich.		Penn-Dixie Portland Cement Co., G. Davis, Supt.	!						· · · · · · · · · · · · · · · · · · ·
Petoskey, Mich.		USWB cooperative	9			×	×		
Little Traverse (Har Springs), Mich.	bor	(Harbor USCG Light (4 hrly)	I I	×	×	×		р 15, 2b	
Cross Village, Mich.		USWB cooperative	2				×		
White Shoal (Cross Village), Mich.		USCG Light (4 hrly)	i i	×	×	×		p 15, 2b	
Lansing Shoal, Mich.		USCG Light (6 hrly)	:	×	×	×		p 15, 2a	
<pre>Grays Reef (Charle- voix), Mich.</pre>		USCG Light (4 hrly)	i I	×	×	×		p 15, 2b	
<pre>Ile Aux Galets (Charlevoix), Mich.</pre>		USCG Light (4 hrly)	!	×	×	×		p 15, 2b	
			_	_					-

	Remarks												•			
	Other															
	ria Total															
ta	Bacteria Coli. To	×														
Hydrographic Data	Hard.															
lydrogre	Turb	X														
I	рН															
	Alk.															
	temp. Treated															
	Water Raw	×					×	-							 	
Intake	location (ft)	1700 (34)					(9) 09									
	No.	143	144	145	146	147	148	149	150	151	152	153	154	155		-

	Orher	15, 2b	15, 2b		15, 2b	15, 2b		
ical Dara	Pcpn.	<u>a</u>	Ω	×	<u>a</u>	<u>a</u>	×	
Meteorological	Air Temp	×	×	×	×	×	×	
Me	Speed	×	×		×	×		
	Wind Dir.	×	×		×	×		
Period	of Record	d 3	ķ	B B	8 5	8	!	
	Agency and Contact	USCG Light (4 hrly)	USCG Lifeboat (4 hrly)	USWB cooperative	USCG Light (4 hrly)	USCG Light (4 hrly)	USWB cooperative	
1000	LOCALION	Beaver Is., Mich.	Beaver Is., Mich.	Beaver Is., Mich.	Gull Is., Mich.	South Fox Is., Mich.	Shoe Island, Mich.	
2	° OSI	156	157	158	159	160	161	

	Remarks												
		Orner											
	eria	Total											
	Bacteria	Coli.											
.c Data	7 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	נומו כ							 			 	
Hydrographic Data	Turb												
Hyd	# 4	114											
	A112	. W.T.	_										
	Water temp.	Treated											
	er	Raw											
Intake	location	(ft)											
	No.		156	157	158	159	160	161					

## 

## e e e

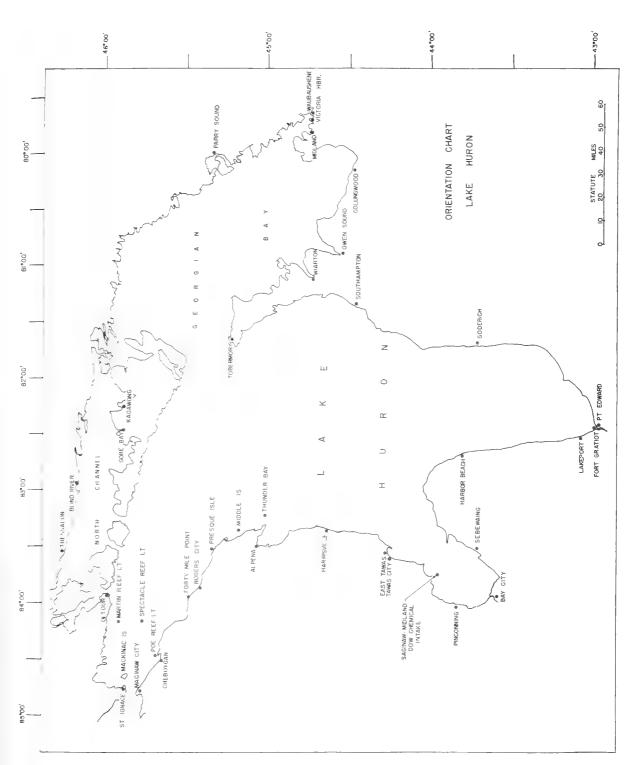


Figure 4. Orientation Chart, Lake Huron

				data)		-								
proceeding counterclockwise)	ta	Other	p 15, 2b	weather (recent da		p 15, 2b			p 15, 2b		p 15, 2b	p 15, 2b	p 15, 2b	
counte	ical Data	Pcpn,					×			×				×
roceeding	Meteorological	Air Temp.	×	1956-		×	×		×		×	×	×	×
and		nd Speed	×			×	×		×		×	×	×	
Passage		Wind Dir. S <sub>l</sub>	×	1951-		×	×		×		×	×	×	
False Detour		Period of Record		variable see data	variable see data	1	89	1	!	69	\$ 	;	ł	7
international boundary at Fa		Agency and Contact	USCG Light (4 hrly)	Water treatment plant (Escanaba)	Water treatment plant (Escanaba)	USCG Lifeboat (4 hrly)	USWB.cooperative	U. S. Lake Survey	USCG Light (4 hrly)	USWB cooperative	USCG Light (4 hrly)	USCG Light (4 hrly)	USCG Light (4 hrly)	USWB cooperative
HURON (starting at		Location	Martin Reef, Mich.	St. Ignace, Mich.	Mackinac Is., Mich.	Mackinac Is., Mich.	Mackinaw City, Mich.	Mackinaw City, Mich.	Cheboygan, Mich.	Cheboygan, Mich.	Poe Reef (Cheboygan), Mich.	Spectacle Reef (Cheboy- USCG gan), Mich.	Forty Mile Point (Rogers City), Mich.	Rogers City, Mich.
LAKE		No.	rt	7	m	4	5	9	7	œ	0	10	11	12

		Remarks		temps prior to 1951 obs.	wich unfell- able thermo- meter										
		Other							lake level (cont.)						
		Bacteria li. Total													
Data		Coli.		1950-		1946-									
		Hard.													
Hydrographic		Turb.		1952-		1957-									
		ЬН		1952-											
		Alk.													
	temn	Treated													
	Water	Raw		1951-											
Intake	200	location (ft)		before 1955: 225 (13)	since 1955: 480 (20)	()						_			
		NO.	Н	7		m	7	2	9	7	∞	6	10	11	12

	Location		Period			Meteorclogical	gical Data	ta
	-	Agency and Contact	of Record	Dir.	Wind Speed	Air Temp.	Pcpn.	Other
Rogers City, Mich	lich.	Mich Limestone and Chem. Div., U.S. Steel D. T. Van Zandt, Mgr.	"Several years"					
Presque Isle,	Isle, Mich.	USCG Light (4 hrly)	i i	×	×	×		p 15, 2b
Middle Is. (A Mich.	(Alpena),	USCG Light (4 hrly)	1	×	×	×		p 15, 2b
Thunder Bay Is. pena), Mich.	.s. (A1.	USCG Light (6 hrly)	8	×	×	×	`	p 15, 2a
Alpena, Mich.		USWB First Order	98	×	×	×	×	p 15, 1
Alpena, Mich.		Water treatment plant (Lansing)	1945-	×				
Alpena, Mich.	٠	USCG Light (4 hrly)	I I	×	×	×		p 15, 2b
Harrisville,	Mich.	USWB cooperative	79			×	×	
East Tawas,	Mich.	USWB cooperative	79			×	×	
Tawas City, Mich.	Mich.	USCG Tawas Point Lifeboat (6 hrly)	!	×	×	×		p 15, 2a
Saginaw-Midl Mich.	and intake,	Saginaw-Midland intake, Water treatment plant Mich.	1948-					
Midland, Mich.	h.	Dow Chemical Co. M. Whiting, Mgr., Service Depts.	1949-	×	×	×	×	rel. humid.

	Remarks									, .	,		same intake as Saginaw-Mid- Land
	Other	"chemical anal." of raw water made once per year					colór	-				free CO <sub>2</sub> , Mg, C1, color	cl, SO4, Si, Na
	eria Total											×	: '
ata	Bacteria Coli. To						×		 	-		× ×	
Hydrographic Data	Hard.			·			×					× .	<b>X</b> ,
Hydrog	Turb						×					× :	×
	pll	, -					×					<b>⋈</b> ;	× .
	Alk.						×					×	×
	r temp. Treated	č					×					·	÷
	Water	×										×	×
Intake	location (ft)	shoreline (6)					2000 (10)					Whitestone Pt., north. shore Sag- inaw Bay;	(see re- marks)
	No.	13	14	15	16	17	18	19	20	21	22	23	24

	Other				p 15, 2a					p 15, 2b				
Meteorological Data	Pcpn.			×			×							. 57
teorolog	Air Temp.			×	×					×				(X)
Me	Wind Speed				×					×				
	N Dir.	×	×		×					×				
70 0 24 0	of Record	1948-	1925-	63	;	1	2	1937-	1	;	;	j i	;	variable see data
hamilton 11.		lant	lant		Range			ınt		:1y)			ic	
	Agency and Contact	Water treatment plant (Lansing)	Water treatment plant (Lansing)	USWB cooperative	USCG Saginaw River Range Light (6 hrly)	U. S. Lake Survey	USWB cooperative	Water treatment plant (Lansing)	U. S. Lake Survey	USCG Lifeboat (4 hrly)	U. S. Lake Survey	U. S. Lake Survey	Canadian Hydrographic Service	смр іі
-	Location Agency and Con	Pinconning, Mich. Water treatment p (Lansing)	Bay City, Mich. Water treatment p (Lansing)			Bay City, Mich. U. S. Lake Survey		Harbor Beach, Mich.   Water treatment pla	Harbor Beach, Mich. U. S. Lake Survey				Point Edward, Ontario   Canadian Hydrograph	Goderich, Ontario

\*\* See Appendix II, p. 160.

	Remarks															
	Other	Cl, odor	Mg, Cl, free CO <sub>2</sub> , color, odor			lake level (cont.)		color, odor	lake level (cont.)		lake level (cont.)	lake level (cont.)	lake level (cont.)			
	ria		×					×								
ata	Bacteria Coli.   To	×	×					×								
Hydrographic Data	Hard.		×													
Hydrog	Turb.		×					×								
	Hd	×	*					×								
	Alk.	×	×					×								
	temp. Treated	×	×					×								
	Nater												·			
Intake	location (ft)	2400 (6)	18480 (19)					2600 (14)								
	No.	25	26	27	28	29	30	31	32	33	34	35	36	37		

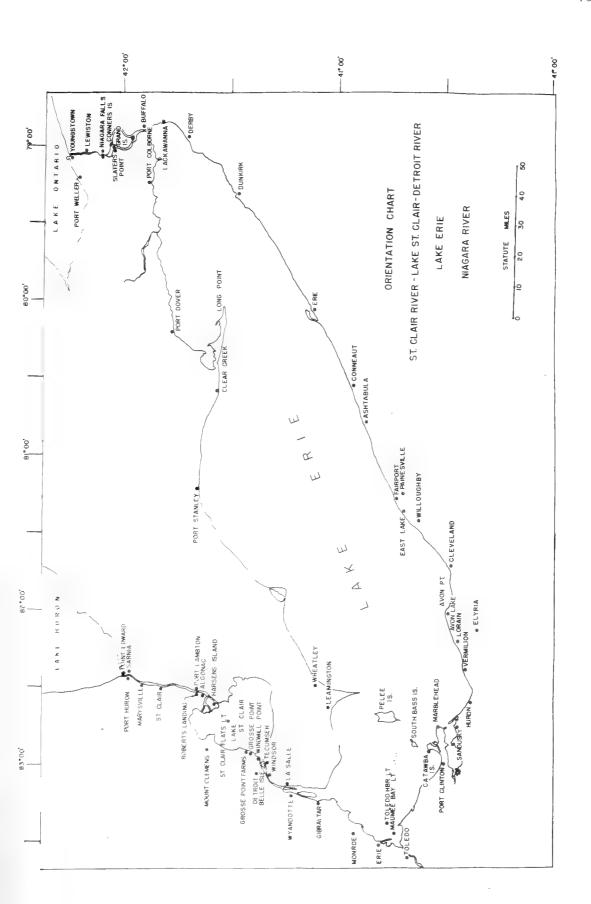
ogical Data	5-4-4		81	43	. , X p 15, 1	. 92	×		×	×	X	63	×	
Meteorological	Wind Air Speed Temp	-	28 81	. 43	X	92	×				×	28 63	X	
	Period Fecord Dir.	1	variable 28	variable see data	**	variable see data	* *	t I	* *	*	* *	variable 28	* *	
	Agency and Contact	Canadian Hydrographic Service	CMD II	CMD II	CMD I	CMD II	CMD II	Canadian Hydrographic Service	CMD III	CMD III	CMD II	CMD II	CMD II	+ 65
	Location	Goderich, Ontario	Southampton, Ontario	Tobermory, Ontario	Wiarton, Ontario	Owen Sound, Ontario	Collingwood, Ontario	Collingwood, Ontario	Midland, Ontario	Victoria Harbor, Ont.	Waubaushene, Ontario	Parry Sound, Ontario	Kagawong, Ontario	E
	No.	38	36	.04	41	42 (	43 (	77	45	95	47	. 84	7 67	. 05

_	Remarks															
	Other	lake level (cont.)						lake level (cont.)								
	Bacteria Coli, Total		Mahasarii a a Madhad a dhialan a			· · · · · · ·										
Hydrographic Data	Hard.											-				
llydro	pll Turb.						-							_		 
	Atk.															
	Water temp. Raw Treated					*						-	·			 
Intake	location (it)												,		· · ·	
	SZ	38	39	40	41	4.2	43	††	45	94	47	48	649	20		

-		1					 						 
	Other												
Meteorological Data	Pcpn,	43	15			er un Benera	 t v to v well-within	au gar ar galle all i Buran	aydallastering benyum	g Spannesse and non	algunga - pilma ( - da	An examples	 
teorolog	Air Temp.	43	15										
Me	Wind Dir. Speed	10 10	A State of the Sta										
	Period of Record	variable see data	variable see data	1									
	Agency and Contact	CMD II	CMD II	Canadian Hydrographic Service	arrived total state.								
	Location	Gore Bay, Ontario	Blind River, Ontario	Thessalon, Ontario									
	No	51	52	53									
							 		~~				 

	Remarks							
	Other		lake level (cont.)	electric and color created to color	Albert of the terror was ago kep to easy	the second se	P - A. PENDE LANGUE	
	Bacteria li Total							
Data	Bac			 				 
Hydrographic Data	Hard.							
Hydro	Turb.							
	hd							
	Alk.							-
	r temp. Treated							
	Water							 
Intake	location (ft)							
	No.	51	53					





Orientation Chart, Lake Erie (including St. Clair River, Lake St. Clair, Detroit River, and Niagara River) Figure 5.

(starting at the southern extreme of Lake Huron)	Meteorological Data	act of Record Wind Air Pcpn. Other	lant 1954-	•	hrly) X X X p 15, 2a	ech. see data   1949- 1949- 1949- 1949- 1949- 1949-	variable see data 1957-         3 3 41 41         pressure, 1957-           int 1953-         3 41 41         41 41           st. of possibly         earlier         10 10 10 10 10 10 10 10 10 10 10 10 10 1	int 1953- gr. of possibly tt earlier		ohic			_
outhern extre	ď	ind										44.44	>
at the	D	of Record	1954-	ì	!	variable see data	variable see data 1953- possibly earlier	1953- possibly earlier	!	!	į,	1	000
CLAIR-DETROIT RIVER (starting		Agency and Contact	Water treatment plant (Lansing)	U. S. Lake Survey	USCG Lifeboat (6 hrly)	Polymer Corp., Ltd. I. C. Rush, Mgr., Tech.		Detroit Edison Plant W. W. Williams, Mgr. of Operations, Detroit	U. S. Lake Survey	Canadian Hydrographic Service	U. S. Lake Survey	U. S. Lake Survey	1.0 + 0
CLAIR RIVER-LAKE ST.		Location	Port Huron, Mich.	Port Huron, Mich.	Port Huron, Mich.	Sarnia, Ontario	Sarnia, Ontario Marysville, Mich.	St. Clair, Mich.	Roberts Landing, Mich.	Port Lambton, Ontario	Algonac, Mich.	Harsens Is., Mich.	40:M
ST.		No .	-	7	n	4	4a 5	9	7	∞	0	10	11

	Remarks					water temp.	records dis- carded after	two yrs.									
		Other		water level (cont.					water level	water level	water level	(bi-daily)	water level (cont.)	water level	(cont.)	water level (tri-daily)	color, odor
	ria	Total											<u> </u>				
Data	Bacteria	Coli.	×														×
Hydrographic		Hard.															×
Hydrog	,	Turb.	×														×
	;	рн															×
	,	Alk.															×
	temp.	Treated															×
	Water	Raw				1956-			×	×		=-					
Intake	location	(ft)	()			ŧ			1	l l				11271		. ,	5000 (16)
	No. 1		,(	7	m	7		т ф	2	9			∞	0,	(	07	11 5

	т	, .						-			
rd	Other	p 15, 1	p 15, 2b								
ical Dat	Pcpn.	×									
Meteorological Data	Air	. ×	×					1930-			
Me	Wind Speed	×	×					-			
	Dir.	×	×							×	
, i	of Record	59	t I	1931-	1	1 8	ž 1	variable see data	variable see data	1924-	1953- possibly earlier
	Agency and Contact	Selfridge Air Force Base	USCG Light (4 hrly)	Water treatment plant (Lansing)	U. S. Lake Survey	U. S. Lake Survey	Canadian Hydrographic Service	Water treatment plant G. H. Strickland, Supt.	Hydro-Electric Power Comm. of Ontario, J. C. Keith, Plant R. Shepley, Sta. Supt.	Water treatment plant (Water Works Park) (Lansing)	Detroit Edison Plants: Conners Creek, Delray, River Rouge, Trenton Channel W. W. Williams Mgr. of Oper., Detroit
	Location	Mt. Clemens, Mich.	St. Clair Flats (Sans Souci), Mich.	Grosse Point Farms, Mich.	Grosse Point, Mich.	Windmill Point, Mich.	17. Tecumseh, Ontario	Windsor, Ontario	Windsor, Ontario	Detroit, Mich.	Detroit, Mich.
-	No.	12	13	14	15	16	17.	18	19	20 II	21- II

	Remarks				alk, pH repor- ted rarely						intake is chan- nel dredged ca	is it deep 140 ft from shore	
		Other			odor		water level (cont.)	water level (cont.)	water level (cont.)	taste, odor, 1928- plankton, 1930-	Cl, conductivity,	odor, plankton	water level
	ria	Total			×					1930-		×	
Data	Bacteria	Coli.			×					1930-		×	
Nydrographic Data	7	Hard.								1950-	1955-		
llydro	E-	lurb.			×					1928-		×	
	7	hud			×					1950-	1955~	×	
	A 1 L	WIN.			×					1950-	1955-	×	
	temp,	Treated			×							×	
	Water	Raw								1930-	1952-		×
Intake	location	(ft)			2000 (14- 16)					1926-1954: 350 (40) 1954-:	300 (40)	(26)	t I
	No.		112	13	7 punt	L.		16	1.7	18	5	20	21-

æ	Other			pressure, cloud cover			p 15, 2b	p 15, 1		p 15, 2b	
gical Dat	Pcpn。							×			
Meteorological Data	Air Temp.						×	×		×	
Me	Wind Speed			×			×	×		×	
	Wi Dir.			×			×	×		×	
, , , , , , , , , , , , , , , , , , ,	of Record	8 2	<b>1</b> 8	1946-	variable see data	3 2	8 8	1942-	8 6	8	
	Agency and Contact	U. S. Lake Survey	Canadian Hydrographic Service	Water treatment plant (Lansing)	Wyandotte Chemical Corp. J. F. Hunter, Pollution Control Engineer	U. S. Lake Survey	USCG Lifeboat (4 hrly)	Naval Air Station	U. S. Lake Survey	USCG Light (4 hrly)	
	Location	Detroit, Mich.	La Salle, Ontario	Wyandotte, Mich.	Wyandotte, Mich.	Wyandotte, Mich.	Belle Isle, Mich.	Grosse Ile, Mich.	Gibraltar, Mich.	Gibraltar, Mich.	
	No °	25	26	27	28	29	30	31 0	32 0	33	

	Remarks				total bact.	discont, after 1956										
		Other	water level (cont.)	water level (cont.)	C1, F1, odor		Cl, Ca, 1937-	water level	(cont.)		water level	(cont.)				
	ria	Total			×											
Data	Bacteria	Coli.			×											
Hydrographic Data	Hard.				×		1937-									
Hydro	Į.	Tarp.			×											
	Ħ	hu			×											
	Alk				×		1937-									
	r temp.	Treated														
	Water	Raw			×		1950-							<del></del>		
	location	(ft)			1800 (25)		1									
	No.		25	26	27		28	29	30	31	32	23	c c			

I.A	LAKE ERIE (starting on United	States side at mouth	of Detroit	River and pro	proceeding compression	l orotuic	( october )
,					Meteorological	gical Data	ta
No.	Location	Agency and Contact	Period of Record	Wind Dir. Speed	Air Temp.	Pcpn.	Other
_	Monroe, Mich.	Water treatment plant (Lansing)	1937-	×			
2	Monroe, Mich.	Univ, of Mich. Research	1956-	X	×	×	lapse rate
n	Monroe, Mich.	USWB cooperative	41		×	×	
4	Monroe, Mich.	U. S. Lake Survey	į				
<b>ا</b>	Erie, Mich.	Consumers Power Co., M. C. Stiff, Electric Prod. Supt., Jackson, Mich.	1955-56-				
9	Toledo, Ohio	Water treatment plant R. R. Henderson, Supt. (Columbus)	1941-				
7	Toledo, Ohio	Interlake Iron Corp. J. L. Johnson, Gen. Supt.	variable see data	(X)	1953-		humidity, 1953- pressure,
∞	Toledo, Ohio	Toledo Edison Co., Bay Shore Plant J. S. Grant, Chief Chemist	1952-53				1953-
6	Foledo, Ohio	USWB cooperative	6		×	×	

1   Toledo, Ohio   USWB cooperative   Of Record   Dir. Speed   Temp.   Period   Dir. Speed   Temp.   Other     1   Toledo, Ohio   USWB cooperative   Of Record   Dir. Speed   Temp.   Other     2   Toledo, Ohio   USWB cooperative   Other   Other			_											
Location Agency and Contact of Record Wind  Toledo, Ohio USWB cooperative 7  Toledo, Ohio USCC Light (6 hrly) X X  Maumee Bay (Toledo), USCC Light (4 hrly) X X  Maumee Bay (Toledo), USCC Light (4 hrly) X X  Ohio W. F. Croben, Supt.  Catawba Is., Ohio USWB cooperative see data  South Bass Is. (Put- USCC Light (4 hrly) X X  in-Bay), Ohio USWB cooperative see data  Marblehead, Ohio USCC Light (4 hrly) X X  Sandusky, Ohio USCC Light (4 hrly) X X	t a	Other			15,	15,			15,		15,		15,	15,
Location Agency and Contact of Record Wind  Toledo, Ohio USWB cooperative 7  Toledo, Ohio USCC Light (6 hrly) X X  Maumee Bay (Toledo), USCC Light (4 hrly) X X  Maumee Bay (Toledo), USCC Light (4 hrly) X X  Ohio W. F. Croben, Supt.  Catawba Is., Ohio USWB cooperative see data  South Bass Is. (Put- USCC Light (4 hrly) X X  in-Bay), Ohio USWB cooperative see data  Marblehead, Ohio USCC Light (4 hrly) X X  Sandusky, Ohio USCC Light (4 hrly) X X	ical Da	Pcpn.	×					41		41				×
Location Agency and Contact of Record Wind  Toledo, Ohio USWB cooperative 7  Toledo, Ohio USCC Light (6 hrly) X X  Maumee Bay (Toledo), USCC Light (4 hrly) X X  Maumee Bay (Toledo), USCC Light (4 hrly) X X  Ohio W. F. Croben, Supt.  Catawba Is., Ohio USWB cooperative see data  South Bass Is. (Put- USCC Light (4 hrly) X X  in-Bay), Ohio USWB cooperative see data  Marblehead, Ohio USCC Light (4 hrly) X X  Sandusky, Ohio USCC Light (4 hrly) X X	teorolog	Air Temp.	×		×	×		42	×	42	×		×	×
Location Agency and Contact of Record Dir Toledo, Ohio USWB cooperative 7  Toledo, Ohio USWC Light (6 hrly) X  Maumee Bay (Toledo), USCG Light (4 hrly) X  Ohio Water treatment plant 1912- W. F. Crohen, Supt. (Columbus)  Catawba Is., Ohio USWB cooperative see data South Bass Is. (Put- USCG Light (4 hrly) X  In-Bay), Ohio USWB cooperative see data Marblehead, Ohio USWB cooperative see data Marblehead, Ohio USCG Lifeboat (6 hrly) X  Sandusky, Ohio USCG Light (4 hrly) X	Me	nd Speed			×	×			×		×		×	×
Location Agency and Contact Toledo, Ohio USWB cooperative Toledo Harbor, Ohio USCG Light (6 hrly) Maumee Bay (Toledo), USCG Light (4 hrly) Ohio Port Clinton, Ohio Water treatment plant W. F. Crohen, Supt. (Columbus) Catawba Is., Ohio USWB cooperative South Bass Is. (Put- (Columbus) in-Bay), Ohio Gibraltar Is. (South Water treatment plant O'SCG Lifeboat (6 hrly) Sandusky, Ohio USCG Light (4 hrly) Water treatment plant O'F. Schoepfle, Supt. (Columbus) Sandusky, Ohio USCG Light (4 hrly) Sandusky, Ohio USCG Light (4 hrly) Sandusky, Ohio USCG Light (4 hrly)		Wi Dir.			×	×			×		×		×	×
Location Agency and Con  Toledo, Ohio USWB cooperative Toledo Harbor, Ohio USCG Light (6 hrl Maumee Bay (Toledo), USCG Light (4 hrl Ohio Port Clinton, Ohio Water treatment p W. F. Crohen, Sup (Columbus) Catawba Is., Ohio USWB cooperative South Bass Is. (Put- in-Bay), Ohio Cibraltar Is. (South Bass Is.), Ohio Water treatment p O. F. Schoepfle, (Columbus) Sandusky, Ohio USCG Light (4 hrl Oor F. Schoepfle, (Columbus) Sandusky, Ohio USCG Light (4 hrl) Sandusky, Ohio USCG Light (4 hrl) Sandusky, Ohio USCG Light (4 hrl)	Poriod	of Record	7	1	i i	1	1912-	variable see data	;	variable see data	İ	1910-	3	81
		Agency and Contact					Water treatment plant W. F. Crohen, Supt. (Columbus)					treatment p Schoepfle, bus)		
		Location	Toledo, Ohio			Maumee Bay (Toledo), Ohio		Catawba Is., Ohio	(Put-	Gibraltar Is. (South Bass Is.), Ohio	Marblehead, Ohio		Sandusky, Ohio	Sandusky, Ohio
		No.	10	11										

	Remarks					variable in-	take depth due to observed	in lake level	supt.)								~
	Other		lake level (cont.)														
	Total					×								×			
Data	Bacteria Coli. To					×								×			
Hydrographic Data	Hard.					×											
Hydro	Turb.					×								×			
	Hď					×								×			
	Alk.					×								×			
	temp. Treated															,	
	Water																
Intake	location (ft)					1000 (0-8)								2500 (19.5)			
	NO.	10	11	12	13	14				15	16	17	18	19	20	21	

Data	Pcpn. Other	weather	p 15, 2b		weather, lake surface		p 15, 2b			humidity,
Meteorological Data	Air Temp. Pc		×		×		×	· · · · · · · · · · · · · · · · · · ·		1956-
Me	Wind Dir. Speed		×		×	1956- 1956- (see remarks)	×			1956- 1956-
	Period of Record	1909-	i t	1916-	1910-	variable see data	1	1903-	1928-	variable see data
	Agency and Contact	Water treatment plant S. R. Hetrick, Supt. (Columbus)	USCG Light (4 hrly)	Water treatment plant W. K. Eisenhauer, Supt. (Columbus)	Water treatment plant G. Walkenshaw, Supt. (Columbus)	Ohio Edison Co., Edgewater Plant J. W. Mikels, Gen. Supt. of Power Production	USCG Lifeboat (4 hrly)	Water treatment plant N. J. Humason, Supt. (Columbus)	Water treatment plant R. R. Underhill, Supt. (Columbus)	Cleveland Elec. and Illum. Co., Avon Plant, C. A.
	Location	Huron, Ohio	Huron, Ohio	Vermilion, Ohio	Lorain, Ohio	Lorain, Ohio	Lorain, Ohio	Elyria, Ohio	Avon Lake, Ohio	Avon Point, Ohio
	No.	22	23	24	25	26	27	28	29	30

	Remarks					intake is 800 ft channel 30 ft wide, 8-10 ft deep mete- orological data on file at Battelle Memorial Inst. Columbus, 0.; letter of re- lease needed from Ohio Ed.	intake is 1000 ft channel dredged to 18 ft depth
	Other					water level 1948-	
	Bacteria.	7019		×	×	×	
Data	. 0	· ×		×	×	××	
Hydrographic	Hard.	×		×.	×	×	
Hydros	Turb.	× :		×	×	××	
	pH	×.		×	×	$\bowtie$	
Aprillate of Section 2	Alk.	×		×	×	$\times$ $\times$	
	Treated						
	Water	×		×	×	1948- X	×
Intake	location (ft)	1000 (13		1904-50; 1300 (8) 1950-; 1300 (12)	2000 ()	see re- marks 1500 (ca 13)	see re- marks
	No.	22	23	24	25	27 28 28 29 29	0

Data	Other		p 15, 2a		pressure					
gical D	Pcpn.			×	×			(V-963)	×	
Meteorological	Air Temp.		×		×					
Æ	Speed		×					1955-		
	Wind Dir.		×					1955-		
Period	of Record	1917-	1	m	14	1932-	!	variable see data	53	1936-
	Agency and Contact	Water treatment plant F. J. Schwemler, Commiss- ioner of Water; Columbus	USCG Lifeboat (6 hrly)	USWB cooperative (Cleve- land Easterly Sewage Pl.)	USWB cooperative (Euclid Ave.)	Cleveland Electric & Illuminating Co., Lake Shore Plant (5 mi. E downtown Cleveland) C. A. Dauber, Dir. Civil & Mech. Engr., Cleveland	U. S. Lake Survey	Cleveland Electric & Illuminating Co., East Lake Plant, C. A. Dauber, Dir. Civil & Mech. Engr., Cleveland	USWB cooperative	Water treatment plant E. Thomas, Supt. (Columbus)
	Location	Cleveland, Ohio	Cleveland, Ohio	Cleveland, Ohio	Cleveland, Ohio	Cleveland, Ohio	Cleveland, Ohio	East Lake, Ohio	Willoughby, Ohio	Fairport, Ohio
	No.	31	32 (	33	34	35	36	37 E	38	39

	Remarks	4 plants, with	Ave.: 4 mi. (36) Baldwin:	4 mi. (28) Nottingham:	3.5 mi. (40) Clague Rd.	(under const.) 2.5 mi. (35)				intake is	dredged chan.		intake is 1000 ft channel	ft depth		
	Other	Mg										lake level (cont.)				c1
	ria	×														×
Data	Bacteria Coli. To	×						,								×
Hydrographic Data	Hard.	×										***************************************				×
Hydrog	Turb.	×														×
	Hď	×														×
	Alk.	×														×
	remp.															
	Water									×			1953-			
Intake	location (ft)	see re- marks								see re- marks			see re- marks			1000 (12)
	No.	31					32	33	34	35		36	37	a	2	39

-												
ত	Other	p 15, 2b			-			р 15, 2а			p 15, 2b	
ical Data					×					×		
Meteorological	Air Temp.	×			×			×			×	
Me	Spee	×						×			×	
	Wind Dir.	×						×			×	
Do: 100	of Record	1 5	1914-	1945-	5	1909-	1930-	-	1900-	19	!	1 8
	Agency and Contact	USCG Lifeboat (4 hrly)	Water treatment plant E. W. Russell, Supt. (Columbus)	Diamond Alkali Co., R. E. Frey, Asst. Works Mgr.	USWB cooperative	Water treatment plant F. J. Hull, Chemist (Columbus)	Cleveland Elec. & Illum. Co., Ashtabula Plt., C. A. Dauber, Dir. Civil & Mech. Engr., Cleveland	USCG Lifeboat (6 hrly)	Water treatment plant W. V. Kantola, Supt. (Columbus)	USWB cooperative	USCG Light (4 hrly)	Water treatment plant J. D. Johnson, Gen. Supt.
	Location	Fairport, Ohio	Painesville, Ohio	Painesville, Ohio	Painesville, Ohio	Ashtabula, Ohio	Ashtabula, Ohio	Ashtabula, Ohio	Conneaut, Ohio	Conneaut, Ohio	Conneaut, Ohio	Eríe, Pennsylvania
;	NO.	40	41	42	43	777	45	94	47	84	64	50

_								1000		ke fo		-
_	Remarks							intake is 100 ft channel dredged to 18 ft depth	4	sent use s 4: 150	on prev. intk.	<sub>1</sub>
		Other Other		C1	HCO3, C1, CO3, Ca, Mg, Na, SiO2, loss on ignition, total solids						color, OCCASIONAL ANALY: Fe, Ca, Mg.	Na, NO <sub>3</sub> , Cl. chlor- inity, total slds.
	ria	Total		×			×			×		
Data	Bacteria	Coli.		×			×			×	, ×-	
Hydrographic	7 200	nara.		×			×			×		
Hydr	Turk	rarp.		×			×	the second date of the second distribution of the second date of the s		×	×	
	На	I.d.		×			×			×		
	Alk	WIN.		×			× .			×	×	
	temp.	Treated										
	Water	Raw		×	×			×				
Intake	location	(ft)		1914-57; 1000 (8) 1957-: 4000 (16)	3488 (22)		1500 (25)	see re- marks		see re- marks	5200 (22)	
	No.		040	41	42	43	777	45	94	47	48 49 50	

æ	Other	p 15, 1	p 15, 1	p 15, 2a					p 15, 2b			p 15, 2a		
ical Dat	Pcpn.	×	×			×	×			×				
Meteorological Data	Air Temp.	×	×	×		×			×	×		×		
Me	Spee	×	×	×					×			×		
	Wind Dir.	×	×	×					×			×		
,	reriod of Record	9	79	i i	ŧ s	1950-	2	;	!	14	variable see data	1	1	!
	Agency and Contact	USWB First Order Ap.	USWB First Order City	USCG Lifeboat (6 hrly)	U. S. Lake Survey	Niagara Mohawk Power Corp, Dunkirk Station P. A. Burt, Supt.	USWB cooperative	U. S. Lake Survey	USCG Light (4 hrly)	USWB cooperative	Erie County Water Auth. H. S. Dewey, Adm. Dir., Ellicott Square Bldg., Buffalo 3, N. Y.	USCG Base (6 hrly)	U. S. Lake Survey	Canadian Hydrographic Service
	Location	Erie, Pennsylvania	Erle, Pennsylvania	Erie, Pennsylvania	Erie, Pennsylvania	Dunkirk, N. Y.	Dunkirk, N. Y.	Dunkirk, N. Y.	Dunkirk, N. Y.	Derby, N. Y.	Lackawanna, N. Y.	Buffalo, N. Y.	Buffalo, N. Y.	Port Colborne, Ontario
	No.	51	52	53	54	55	99	57	58	59	09	19	62	63

	Remarks						intake samples entire water column between	8 and 21 feet							
	Other				lake level	(cont.)	conductivity, SO2, SO4, C1, HCO3, lake level		lake level	(cont.)		color, odor, 1928-summer plankton,	1930-	lake level (cont.)	lake level (cont.)
	Bactería i. Total											1926-			
Jata	Bact Coli.								,,			1926-			
Hydrographic Data	Hard.						×					1926-			
Hydrog	Turb.						×					1928-			
	Нq						×					1926-			
	Alk.											1926-			
	temp. Treated						, , ,								
	Water Raw						×								
Intake	-						at break- wall (see remarks)					()			
	No	51	52	53	54		55	56	57	58	59	09	61	62	63

Location		Agency and Contact	Period	Wind		Meteorological Data	gical De	
			or kecord	Dir.	Speed	Temp.	Pcpn.	Other
Fort Dover, Ontario CMD II			variable see data			80	80	
Long Point, Ontario CMD II			variable see data	32	32	40	40	·*
Clear Creek, Ontario CMD I			* *	×	×	×	×	p 15, 1
Port Stanley, Ontario   Canadian Hydrographic   Service	Canadian Hydr Service	ographic	1					
Wheatley, Ontario Ont. Dept. Lands & Forests Station Dr. D. V. Anderson, Maple, Ontario	Ont. Dept. La Forests Stati Dr. D. V. And Maple, Ontari	nds & on erson, o	1					
Leamington, Ohtario CMD II			variable see data			42	42	
Pelee Is., Ontario CMD II			variable see data			29	29	
See Appendix II, p. 160.								

	Remarks					recording	at station				9		
	Other				lake level	(cont.)							
	Bacteria 1. Total												
Data	Bact Coli.												
Hydrographic Data	Hard.									 			
Hydro	Turb.		_										
	Hd												
	Alk.						-						
	temp. Treated												
	Water					×							
Intake	location (ft)								- **				
-	S O	79	65.	99	67	89	(	ر د د	70				

		ler					7					
	2	Other					p 15,					
	ical Data	Pcpn.					×	×	×	37		
	Meteorological	Air Temp.					×	×	×	42		
	Met	Wind Speed					×					
		Dir.					×					 
		Period of Record	1948-	!	1	1	1943-53	*	*	variable see data		
south to north)		Agency and Contact	Niagara Mohawk Power Corp., Huntley Station W. G. Godfrey, Supt.	Canadian Hydrographic Service	U. S. Lake Survey	U. S. Lake Survey	Naval Air Station	CMD II	CMD II	USWB cooperative		
NIAGARA RIVER (proceeding s		Location	Grand Is. (Tonawanda),	Slater's Point, Ontario	Conner's Is., N. Y.	Niagara Falls, N. Y.	Niagara Falls, N. Y.	Niagara Falls, Ontario	Niagara Falls, Ontario	Lewiston, N. Y.	See Appendix II, p. 160.	
NIA		No.		7	m	4	2	9	7	∞	*	

											 	· · · · · · · · · · · · · · · · · · ·	
	Remarks												
		Other	SO4, C1; water level from 1933	water level (cont.)	water level (cont.)	water level (cont.)							
	eria	Total											
Data	Bacteria	Coli.								· · · · · · · · · · · · · · · · · · ·	 		
Hydrographic	;	Hard.	×										
Hydrog	-	Turb.	×										
	:	ЬН	×										
	7 1 1	AIK.	×										
	temp.	Treated		<u> </u>							 		
	Water	Raw	×										
Intake	location	(ft)	shoreline (27)								***		
	No.		Н	7	es .	4	2	9	7	∞			

•	
	·

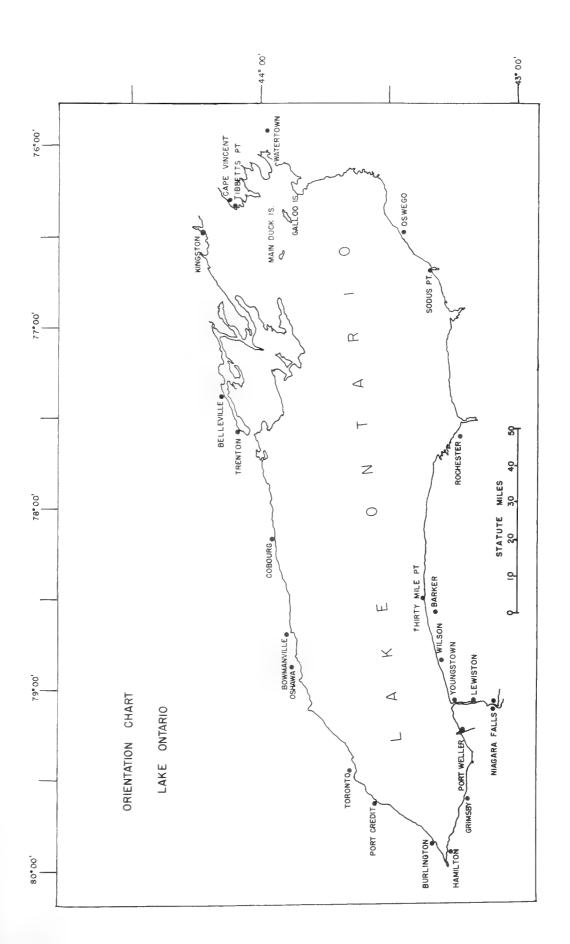


Figure 6. Orientation Chart, Lake Ontario

ta	Other	р 15, 2а				p 15, 2b			p 15, 2a		p 15, 2b	pressure, 1948-	p 15, 2b
sical Data	Pcpn。			×	×		- very of Navier Navier			- 3	<u> </u>		
Meteorological	Air Temp.	×				×			×		×	1948-	×
Me	Wind Speed	×		-,		×			×		×		×
	Wi Dir.	×				×			×		×		×
Period	of Record	1	1	18	18	B B	mid 1955-	variable see data	!	i	!	variable see data	1
	Agency and Contact	USCG Lifeboat (6 hrly)	U. S. Lake Survey	USWB cooperative	USWB cooperative	USCG Light (4 hrly)	Bureau of Water I. Q. Lacy, Supt.	Eastman Kodak Co. L. C. Faulkenberry, Asst. to the Gen. Mgr.	USCG Lifeboat (6 hrly)	U. S. Lake Survey	USCG Light (4 hrly)	Niagara Mohawk Power Co. W. M. Jeram, Supt.	USCG Lifeboat (6 hrly)
100.	הסכמרדיסוו	Niagara (Youngstown), N. Y.	Niagara, N. Y.	Wilson, N. Y.	Barker, N. Y.	Thirty Mile Point (Barker), N. Y.	Rochester, N. Y.	Rochester, N. Y.	Rochester, N. Y.	Rochester, N. Y.	Sodus Point, N. Y.	Oswego, N. Y.	Oswego, N. Y.
N O		Н	2	n	4	5	9	7	∞	0	10	11	12

	Intake					llydrog	llydrographic	Data			
No.	10	Water	er temp.	A1k.	Hu	Turb		Bacteria	ia	140	Remarks
	(IE)	Raw	Treated	The state of the s	117		וומדמ	Coli.	Total	Uther	
,											
2										lake level (tri-	
										daily)	
3											
7											
2					·•.						
9	8300 (50)	×		×	×	×					
7	7800 (55)	1937-			1947-	1952-	1947-			radioactivity, 1952	ı
										ANAL: volatile and	
										iron and alumina	•
						=				sulphuric anhy-	
$\infty$										dride, Cl, 1947	
6		·								lake level (cont.)	
10											
11	550 (20)	1948-			1940-		1940-			CO <sub>3</sub> , HCO <sub>3</sub> , C1, SO <sub>4</sub> , SiO <sub>2</sub> , total diss.	
										solids, conductiv-	

No	Location	Agency and Contact	Period of Record	Wind	Meteorological Data	logical	Data		
			or Kecora	Dir. Speed		Pcpn.	n.	Other	
13	Oswego, N. Y.	USWB cooperative	variable see data		104	112	2		
14	Oswego, N. Y.	U. S. Lake Survey	8		<del></del>				
15	Galloo Is., (Sacketts Hbr.), N. Y.	USCG Lifeboat (4 hrly)	i i	×	×		<u>σ</u>	15, 2b	
16	Watertown, N. Y.	USWB Second Order CAA Ap	10	X	×	×	<u> </u>	15, 1	
17	Tibbetts Point (Cape Vincent), N. $Y$ .	USCG Light (4 hrly)	1 1	×	×		<u>p</u> 1	15, 2b	
18	Cape Vincent, N. Y.	USCG Light Attendant (4 hrly)	1	×	×		<u>a</u>	15, 2b	
19	Cape Vincent, N. Y.	U. S. Lake Survey	1						
20	Kingston, Ontario	смD с	variable see data	20 20	72	72		sunshine, 76	
21	Kingston, Ontario	CMD II	* *		×	×			
22	Kingston, Ontario	CMD II	* *	J	×	×			
23	Kingston, Ontario	Canadian Hydrographic Service	0 8						
24	Main Duck Is., Ontario	смо с	10	10 10			(ме	(weather)	
S	** See Appendix II, p. 160.								

Remarks													
Other		lake level (cont.)					lake level (cont.)				lake level (cont.)		
C. C.	Coli. Total												
Hydrographic Data													
Hydr Turb.													
Hď	,								<del></del>				 
Alk.						· · · · · · · · · · · · · · · · · · ·							
r temp.	זוגפוני												
	WBM												
Intake location	(11)												
No.	13	14	15	16	17	18	19	20	21	22	23	24	

Location Belleville, Ontario	5	Agency and Contact	Period of Record variable see data	Mind Dir. Speed	Meteorological Air Pc d Temp.	rcal Data Pcpn.	Other Sunshine, 25
Belleville, Ontario CMD II Trenton, Ontario CMD I			89 *	×	89 X	89 ×	p 15, 1
Trenton, Ontario CMD II Cobourg, Ontario CMD II	н н		** variable see data	24 24	x 12	× 12	
Cobourg, Ontario Canadian Hydrographic Service	Canadian Hydrographic Service		1				
Bowmanville, Ontario CMD II			*	,	×	×	
Oshawa, Ontario CMD II	CMD II		*		×	×	
Toronto, Ontario Water treatment plant D. P. Scott, Deputy Comm. of Works			variable see data	ca 1948-			
Toronto, Ontario Hydro-Elec. Power Comm.  of Ontario, R. L. Hearn Generating Station, E. D. Holdup, Plant Supt.	Elec. tario, ating S	• c	variable see data				
Toronto, Ontario West Hill CMD III			* *			×	
Toronto, Ontario   Scarborough CMD III	Scarborough CMD III		*			×	

\*\* See Appendix II, p. 160.

	Remarks													
	Other						lake level (cont.)			plankton, 1922- nitrogen, Cl, diss. O <sub>2</sub> (period un- certain) lake level, 1912-	conductivity, 1955-			
	Bacteria 1i. Total						·			1914-				
Data	Bact Coli.		-							1912-				
llydrographic	Hard.									1912-17 1922-23 1931	1955-			
llydr	Turb.									1913-				
	Hď									1925-	1955-			
	Alk.									1912-	1955-			
	temp. Treated													
	Water									1936-	1952-			
	location (ft)									before 1918: 3800 (35 1918-pres: 3800 (69)	see re- marks			
	No.	25	26	27	28	29	30	31	32	33	34	35	36	

g	Other							sunshine, 77 p 15, 1						
Meteorological Data	Pcpn.	×	×	×	×	×	×	119		×	×	(X) (gauges op. by City Engrs. Dept.)	×	28
teorolog	Air 1 Temp.					×	×	119		×	×	1951-		(x)
Me	Wind Speed							36				1957-		
-	W Dir.							36				1957-		
:	Period of Record	* *	*	* *	* *	* *	*	variable see data	!	*	* *	variable see data	* *	*
	Agency and Contact	Birchcliffe CMD III	Admiral Road CMD III	Balmy Beach CVD III	Hyde Park CMD III	Highland CMD II	Newtonbrook CMD II	CMD I	Canadian Hydrographic Service	CMD II	CMD II	Water treatment plant D. H. Matheson, Dir. of Laboratories	CMD III (Gage Park)	CMD II (Hamilton)
	Location	Toronto, Ontario	Toronto, Ontario	Toronto, Ontario	Toronto, Ontario	Toronto, Ontario	Toronto, Ontario	Toronto, Ontario	Toronto, Ontario	Port Credit, Ontario	Burlington, Ontario	Hamilton, Ontario	Hamilton, Ontario	Hamilton, Ontario
	No.	37	38	39	04	41	42	43	77	45	95	47	48	65

\*\* See Appendix II, p. 160.

	Remarks											
	Other	To comment							lake level (cont.)			chem, phys, biol, werk on Burlington Bay at intervals since 1935 lake level, 1952-
	ria Total	;										1934-
Data	Bacteria Coli, Tot											1933-
Nydrographic	llard,	the consequence							_			1933 -
Nydrog	Turb.											1934-
	pll											1933-
	Alk.											1933-
	Treated											
	Nater temp. Raw Treat											1934-
Intake	location (ft)											TWO IN- TAKES 2200 (30) 3000 (30)
- 2	ON	37	38	39	04	41	42	43	77	45	94	48 46

<del>-</del>						-				
Other	p 15, 1									
Pcpn.	×	×	×							
Air Temp.	×	×	×							
Spee	×							•		
Wi Dir.	×							_		
of Record	*	*	*	1						
Agency and Contact	CMD I	CMD II	CMD II	Canadian Hydrographic Service						
Location	Hamilton, Ontario	Grimsby, Ontario	Grimsby, Ontario	Port Weller, Ontario	ee Appendix II, p. 160.					
					s					
	Agency and Contact of Record Wind Air Pcpn.	Agency and Contact of Record Wind Air Pcpn.  CMD I *** X X X X X P Plus    CMD I *** X X X X X X Y Plus    CMD I *** X X X X X X X Y Y Plus    CMD I *** X X X X X X Y Y Y Plus    CMD I *** X X X X X X X X X X X X Y Y Plus    CMD I *** X X X X X X X X X X X X X X X X X	Agency and Contact of Record Wind Air Pcpn.  CMD I ***	Agency and Contact of Record Wind Air Pcpn.  O CMD I **	Agency and Contact of Record Wind Air Pcpn.  CMD I	Agency and Contact   Of Record   Wind   Air   Pcpn.	Agency and Contact   Of Record   Wind   Air   Pcpn.	Agency and Contact   Of Record   Wind   Air   Pcpn.	Agency and Contact   Of Record   Wind   Air   Pcpn.	Agency and Contact   Of Record   Wind   Air   Pcpn.

Remarks	Nemat Na											
Nydrographic Data	Raw Treated Alk, pH Turb, Hard, Coli, Total Other				lake level (cont.)							
Intake	(ft)									 	 	
No.		30	51	52	53	 	 			 	 	

## H. Non-tabulated Data

Information relating to river discharge has not been included in the tabulations. Discharge figures for major streams and rivers tributary to the Great Lakes are obtained from gaugings in both the United States and Canada. In the United States, the responsible agency is the U. S. Geological Survey. Records pertinent to the Great Lakes basin are published yearly in the publication Surface Water Supply of the St. Lawrence River Basin.

In Canada, discharge records are obtained by the Canada Department of Northern Affairs and National Resources, Water Resources Branch. Records are published yearly in <u>Water Resources Papers</u>, which are very similar to those issued by the U. S. Geological Survey.

Both of the above publications are generally two to three years in arrears. More recent data, if desired, are available from individual U. S. Geological Survey offices in the United States, or from the Department of Northern Affairs and National Resources, Water Resources Branch, Ottawa, Ontario.

There are several sources of meteorological data that are not shown in Table 1. Principally, these are data collected by commercial vessels operating on the Lakes. These have not been listed in Table 1 since the data are obtained in varying quantities and locations during the year.

There are approximately 37 commercial lake vessels operated by United States companies and about half that many Canadian commercial vessels that make meteorological measurements when operating more than four miles from shore. These data are transmitted by radio to collection agencies in Canada and the United States for use by marine meteorological personnel and for dissemination over meteorological communications networks.

In addition, there is a smaller number of research and other special purpose vessels which take meteorological data at whatever time they may be conducting operations. This group is comprised of fisheries investigations vessels, U. S. Lake Survey vessels such as the "Williams", the paper mill cruiser operated in northeastern Lake Superior by Colin A. MacMillan of the Marathon Paper Company, and the U. S. Coast Guard cutter "Mackinac." The latter vessel makes six-hourly reports to the U. S. Weather Bureau at Cleveland, Ohio, whenever operating farther than four miles from shore.

## Table 2. Inland Data Sources

Table 2 lists all meteorological data sources that were <u>inland</u> from the sources listed in Table 1. An inland source was defined to be suitable for inclusion in Table 2 if it was more than two miles from the nearest Lake shoreline. As was indicated earlier, an irregular area surrounding the Lakes was specified to be important as far as the meteorological effects on the Lakes are concerned. This "area of influence" was selected as the drainage basin of the Great Lakes. The basin has been determined by the U. S. Lakes Survey (see Fig. 7, p. 112).

All data sources in the drainage basin (or watershed) of the Lakes, that could be ascertained by the project, are listed. Tabulations are made geographically by state and province, but alphabetically by stations under each province and state. Accordingly, the geographical coordinates of inland stations are shown in degrees and minutes of arc. The type of data source is indicated in the second column; abbreviations have the following meanings: FO - USWB First Order; SO - USWB Second Order; Co - USWB Cooperative; I - CMD Class I; II, III, and c - CMD Classes II, III, and c, respectively; and R - research facility. Some locations have more than one First Order station. Usually one is located at an airport; hence the abbreviation Ap is used in the tabulations. If the installation is in the city, City is used, and if the facility is military, the following are used: NAS for Naval Air Stations, and AFB for Air Force Bases. The letters CAA and USCG refer to Civil Aeronautics Administration and U. S. Coast Guard facilities, respectively.

With respect to future use of the material compiled in Tables 1 and 2, project personnel adjudged that data sources in close juxtaposition to the watershed boundary, but outside it, should be included in the tabulation. This procedure was justified on the grounds that meteorological events (precipitation, for example), although occurring outside the basin would, nevertheless, be representative of conditions in the immediate vicinity of the basin boundary. The number and locations of extra-basin stations were arbitrarily selected. Here again, the stations outside the watershed used by the U. S. Lake Survey in computation of precipitation regimes for lake level studies were used as a basic group. In addition to these, several First Order and Class I stations were included even though they were located somewhat farther distant than most from the basin boundary. All stations outside the boundary are indicated in Table 2 by an asterisk preceding the location name.

The same system for indicating length of record and parameters measured is used here that was employed in Table 1; that is, the numbers appearing in the columns to the right of the location specifications are years of record. Where it is known that an element is measured but the length of record is not known, "X" appears in the space. All parameters taken that are not specified in the table may be determined by consulting the reference given in the last column to the right.

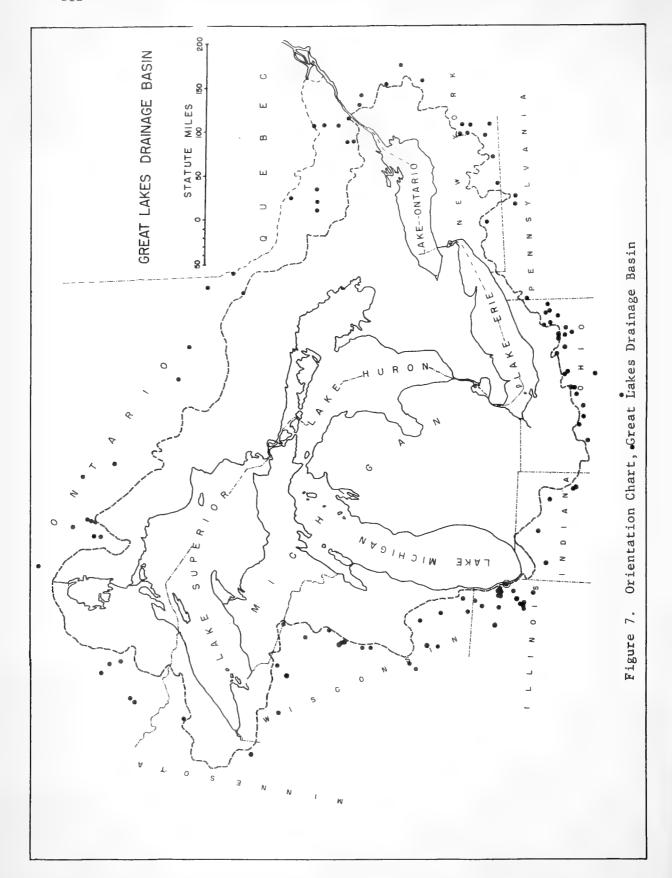


Table 2. Inland Data Sources

No.	Clas	Location	Lai	t N min	Long	r 1./ 1	Per of Rec	Temp Yrs	Pcpn Yrs	Wind Yrs	Wea Yrs	
		MINNESOTA										
7		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	. 7	, ,			2.0	20	2.0			
1 2	Co	*Babbitt	47	41	91	55	39	38	39			
3	Co	Brimson	47	16	91	52		/ 0	X			
4	Co	Cloquet Exp. For.	48 46	42 50	94 92	18	48 18	48	48	1.0	7.0	15 ) (10)
5	FO Co	Duluth Airport Gunflint Lake	48	05	90	11 42	10	18	18	18	19	p 15, 1:(18)
6	Co	Hibbing Power	47	27	92	57	٥		8 X			
	CO	Substation	4/	4/	74	7			Λ			
7	Co	Holyoke	46	28	92	23	16		16			
8	Co	Isabella 1 mi. W	47	37	91	22	10	1	10			
9	Co	Island Lake Reser-		59	92	14		1	X			
		voir	40		32	14			Δ			
10	Со	Mahoning Mine	47	28	92	59	38	37	38			
11	Co	Meadowlands 2 mi.	47	03	92	45		48	49			
		SSW	7/		1	75		70	77			
12	Co	*Moose Lake 1 mi.	46	27	92	45	37	35	37			
		SE			-							
13	Co	*Moose Lake Ranger	46	27	92	46	30		30			
		Station			-							
14	Со	Virginia OMIC Lab.	47	32	92	32	65	65	65			
15		Wales 2 mi. E	47	13	91	43	15		15			
16		Whiteface Reser-	47	17	92	11			Х			
ı		voir										
		WISCONSIN										
1	Co	*Antigo	45	09	89	09	65	65	65			
2		Appleton	44	15	88	23	55	55	55			
3		Berlin	43	58	88	57	18	))	18			
4		Bowler	44	52	88	59	21	1	21			
5		Breakwater	45	50	88	15	37		37			
6		Brillion	44	11	88	04	35	İ	35	,		
7		Brule Ranger Sta.	46	32		35	28		28		- 1	
8		Brule Island	45	57	88	13	37	23	37			
9		*Burnett	43	30	88	42	56	56	56			
10		Chilton Sewage	44	02	88	09	32	32	32			
		Plant						-	J			
11	Co	Clintonville	44	37	88	45	18	6	18			
12		*Coddington 1 mi.	44	22	89	32	38	38	38			
		E				-	-0		30			
13	Co	Crivitz High Falls	45	17	88	12	48	48	48			
14		Dalton	43	39	89	12	14	14	14			
15		Drummond	46	20	91	15	16	- '	16			
16		Eldurado 1 mi. SE	43	48	88	37	20	20	20			
17		*Flambeau Reser-	46	04	90	14	33		33			
		voir										
18	Co	Fond du Lac	43	47	88	27	73	73	73			

No.	Class	Location	Lat	N	Long	WI	Per of	Temp Yrs	Pcpn Yrs	Wind Yrs	Wea Yrs	Oth	ner :yrs)
			ueg	шти	deg		Rec_	115	113	112	113	(IEL	yrs)
		WISCONSIN cont.											
19	Co	Germantown 2 mi. W	43	13	88	09	15	15	15				
20	FO	Green Bay Airport	44	29	88	08	72	72	72	72	72	p 15,	1:(72
21	Co	Gurney	46	28	90	30	6	6	6				
22	Co	Hancock Exp. Farm	44	07	89	32	67	67	67				
23	Со	*Hayward Ranger Station	46	00	91	29	27		27				
24	Co	Lac Vieux Desert	46	08	89	08	14		14				
25	Co	*Lake Geneva	42	36	88	26	14	14	14				
26		Laona 4 mi. SSW	45	30	88	42	29	28	29				
27		Lily	45	19	88	51	17		17				
28	Co	Longlake Dam	45	54	89	08	51	51	51				
29	FO	*Madison Airport	43	08	89	20	19	19	19	19	19		
30	FO	*Madison City	43	05	89	24	90	90	90	90	90	p 15,	
31	FO	*Madison Truax AFB	1	18	89	21		X	X	X	Х	p 15,	1: (X)
32	Co	Mellen 2 mi. N	46	21	90	37	33	33	33				
33 34	Co	Mercer Ranger Sta.	46	10	90	04	25	21	25	31	2.1	15	1./21
35	FO	Milwaukee Ap. Montello	42	57	87	54 19	31 63	31	63	21	31	p 15,	1: (3)
36	Co Co	New London	44	48 23	88	44	63	63	63				
37	Co	rew London roconomowoc 1 mi.	43	06	88	31	20	20	20				
	CO	SW											
38	Со	Oshkosh	44	03	88	32	70	70	70				
39	SO	*Park Falls	45	56	90	27	48	48	48	X	X	p 15,	1: (X)
40	Со	Peshtigo	45	04	87	44	13		13				
41	Co	*Phelps Deerskin	46	03	89	02	49		49				
42	Со	Pine River 3 mi.	44	11	89	02	7	7	7				
43	Co	Plymouth	43	45	87	59	49	49	49				
44	Co	Portage	43	32	89	27	70	66	70				
45	Со	Rest Lake	46	08	89	53	49	49	49				
46	Co	*Rhinelander	45	38	89	25	57	54	57				
47	Co	Ripon 5 mi. NE	43	52.	1	45	4		X				
48	Co	Rosholt Collins	44	36	89	20	4	X	18		-		
49	1	Shawano	44	47	88	37	a .	63	63				
50	Co	Solon Springs	46	21	91	49	1	53	53	1			
51	Co	South Pelican	45	32	89	12	v		14			ļ	
52	Co	*Stevens Point	44	30	89	34	a	1	66				
53	Co	Summit Lake Ranger   Station	45	23	89	12	19		19				
54		Townsend	45	20	88	35			14				
55	1	*Union Grove	42	42	88	03	ar	1	18				
56	l l	Waupaca	44	22		05	1		64				
57	1	*Wausau	44	59		39			14				
58	ţ	*Wausau CAA Ap.	44	55	1	37	н	4	64	Х	X	p 15,	1:(X
59	4	*Wausau Old P.O.	44	57		38			25				
60		Wausaukee	45	23	,	57	41		26				
61 62	Co	West Allis	43	01		59			7				
	Co	West Bend	43	25	88	11	45	45	45	1	1	1	

No.	Class	Location	Lat deg		Long		Per of Rec	Temp Yrs	Pepn	Wind Yrs	Wea	
		ILLINOIS										
1 2	Co Co	*Antioch *Arlington Hgts. 4 mi. SSE	42 42	29 02	88 87	06 58		38	38 8			
3	Со	*Chicago Calumet Treatment Works	41	40	87	36	21		21			
4	Со	*Chgo Mayfair Pmpg. Station	41	58	87	45	32		32			
5	Со	*Chgo N. Br. Pmps Station	41	58	87	42	25		25			
6	Co	*Chgo Roseland Pmpg. Station	41	42	87	38	32		32			
7	Со	*Chgo San. Dist. Disp. Plant	41	50	87	42	27		27			
8	Со	*Chgo Springfield Pmpg. Station	41	55	87	44	32		32			
9	FO	*Chicago Midway Airport	41	47	87	45	30	30	30	30	30	p 15, 1:(30)
10	FO	*Chicago O'Hare Airport	42	00	87	53	~ -	Х	Х	Х	Х	p 15, 1:(X)
11	Co	*Elgin	42	02	88	17	51	3.5	51			
12 13	FO Co	*Glenview NAS *Joliet Brandon Rd.	42 41	05 30	87	49 06	15 67	15	15 <b>67</b>	15	15	p 15, 1:(X)
14 15	SO Co	*Joliet CAA Ap.  *Joliet	41 41	36 32	88 88	05 05	17	X 16	X 17	Х	Х	p 15, 1:(X)
16	R	*Lemont Argonne National Lab.	41	40	88	00	10	10	10	10	10	radiation, micrometeor- ological
17 18 19 20 21 22	Co Co	*McHenry *McHenry 2 mi. S *Peotone *Wheaton College *Skokie *Skokie N. Side Treatment Works	42 42 41 41 42 42	21 19 20 52 02 01	88 88 87 88 87 87	16 15 48 06 45 43	19 17 18 30 4	X 4	19 17 18 30 4 X	A Line Line Group (Line )		measurements
		INDIANA										T of the state of
1		Angola	41	38	85	00	60	60	60			
2	Со	Berne	40	40	84	57	48	48	48			
3 4	Co Co	*Bluffton Sewage	40	44 45	85 85	11 11	62 18		62 18			
5		Plant *Bluffton Water	40	44	85	10	10	Х	10			
6	Co	Works *Columbia City	41	09	85	29	56	21	56			
7	1	*Columbia City 1 mi. S	41	08	85	29	18		18			

No.	Class	Location	Lat deg		Long deg		Per of Rec	Temp Yrs		Wind Yrs	Wea Yrs	Other (ref:yrs)
		INDIANA cont.					I.C.C.				-	
	İ											
8	Co	Decatur	40	51	84	56	27		27	1		
9	Co	Elkhart	41	41			8		8			
10	Со	Ft. Wayne Dis-	41	06	85	07	13		13			
		posal Plant										
11	FO	Ft. Wayne Airport	41	00	l	ı	47	47	47	47	47	p 15, 1:(47)
12	Co	Fremont	41	44	84		9		9			
13	SO Co	Goshen CAA Airport		32	85	1	18	X	18	Х	X	p 15, 1:(X)
15		Goshen College Hobart	41	34 32	85 87	1	44 39	39	44 39			
16		Kendallville	41 41	27	85	1	12	12	12			
17		Kendallville	41	26	85		18	12	18	1		
18		Lagrange	41	39	85	1	18		18			
19		La Porte	41	36	86		64	61	64			
20		Monroeville 3 mi.	40	59	84		18	"	18			
		ENE										
21	Co	*Plymouth Power	41	20	86	20	54	53	54			
		Substation						-				
22	FO	South Bend Airport	: 41	42	86	19	71	65	71	65	65	p 15, 1:(65)
23	Co	Valparaiso Water	41	31	87	02	59	58	59	X		evaporation
	į	Works										(X)
24		Waterloo	41	25	85	1	21	19	21			
25	Со	Waterloo Highway	41	26	85	01	18		18	i		
		Garage	, ,		0.7	0.1	, ,					
26	Со	*Wheatfield	41	11	87	04	41	41	41			
		MICHIGAN										
1	Co	Adrian	41	54	84	02	81	81	81			
2	Co	Alberta Ford For-	46	39	88	29	1	1	1			
		estry Court										
3	Co	Albion Rice Creek	42	17	84	46	49		49			
		Station										
4		Allegan Sewage Pl	42	32	85		70	70	70			
5		Alma	43	23		40	72	72	72			(2)
6		Ann Arbor Univ. Sta.	42	17		44	79	79	79	1		suns., press. (2)
7		Atlanta 3 mi. ENE	45	01		06		32	32			
8 9	- 1	Bad Axe Baldwin St. Forest	43 43	48 54	83 85	01 51	34 31	34	34			
10		Battle Creek Ap.	42	18		14	75	75	75	Х	x	p 15, 1:(X)
11		Beavertown Pwr. Pl.	43	53	84	29	11	,,	11	Δ,	21	15, 1.(4)
12		Beechwood 7 mi.	46	11	88	- 1		х	x			
	30	WNW	-5					-				
13	Co	Bellaire Hydro.	44	59	85	12	13		13			
		P1 ant										
14	Co	Bergland Hydro.	46	35	89	33	35	26	35			
		Plant										
15	Co	Big Rapids Water	43	42	85	29	63	63	63			
		Works										
16	Co	Bloomingdale	42	23	85	57		X	X (	ì		

No.	Class	Location	Lat		Long	g W	Per of	Temp Yrs	Pepn	Wind Yrs		Other (ref:yrs)
			ueg i	IIITI	deg	HILL	Rec_	115	115	115	115	(Tel:yls)
		MICHIGAN cont.										
17	Со	Boyne Falls St. Nursery	45	13	84	48		Х	Х			Market and the second s
18	Co	Burnside 1 mi. E	43	12	83	03	16		16			
19	Со	Cadillac Water Works	44	15	85	24	50	50	50			
20	Co	Caro State Hosp.	43	27	83	24	31	31	31			
21	Со	Casnovia 1 mi. N	43	15	85	48	16		16			
22	Со	Champion Van Riper Park	46	31	87	59		Х	Х			
23	Co	Charlotte	42	32	84	1	55	55	55			
24	Со	Chatham Exp. Farm	46	21	86	56	58	55	58			
25	Co	Coldwater St. Sch	41	57		00	68	68	68			
26	Со	Coldwater Sewage Treatment Plant	41	56	85	01			Х			
27	Со	Crystal Falls 6 mi. NE	46	10	88	14	16		16			
28	Со	Dearborn	42	18	83	14	6	6	6	6		evaporation (6)
29	FO	Detroit City Ap.	42	24	83	00	88	88	88	88	88	p 15, 1:(88)
30	FO	Detroit Wayne Co.	42	13	83	19	5				5	ceiling,
31	FO	Detroit Willow Run Airport	42	14	83	32	8	8	8	8	8	p 15, 1:(8)
32	R	Detroit Int'l Joint Comm. Res.	42	28	83	14	3	3				lapse rate 870 ft (3)
33	Co	Dowagiac	41	59	86	07	5	5	5		1	
34		East Jordan	45	10	85	07	33	33	33	33	33	
35	Со	East Lansing Exp.	42	42	84	28		Х	Х	X		evaporation (X)
36	FO	East Lansing	42	44	84	29	48	48	48	48	48	p 15, 1: (48
37	Со	East Lansing Hort. Farm	42	43	84	28	1	1	1	1		evaporation
38	Co	Eaton Rapids	42	31	84	39	39	1	39			
39	Со	Eau Claire 4 mi.	42	01	86	15	35	35	35			
40	Co	Edmore	43	24	85	02	5		5			
41	Со	Evart	43	54	85	16	7	7	7			
42	Со	Ewen	46	32		16	16		16			
43	Co	Fife Lake 2 mi. S	44	33		21	40	40	40			
44	FO	Flint Airport	42	58	83	44	70	70	70	21	21	p 15, 1:(21
45	Со	Freesoil 4 mi. SW	44	04		17	16		16			
46	Со	Gaylord Cons. Dpt.	45	02	1	41	49	39	49			
47	Со	Germfask Wildlife Refuge	46	17	85	57	19	19	19	Х		evaporation (X)
48	SO	Gladwin CAA Ap.	43	59	84	29	54	54	54	X	X	p 15, 1:(X)
49	Со	Glennie Alcona Dar	,		1	55	11		11			
50	Co	Grand Haven Fire Dept.	44	34		48	88	88	88			
51	Co	Grand Ledge	42	45	84	46	41		41			

No.	Class	Location	Lat deg	N min	Long deg	7 W [	Per of	Temp	Pcpn irs	Wind Yrs	Wea Yrs	
		MICHIGAN cont.										
52 53	FO Co	Grand Rapids Ap. Grayling Military	42	54 38	85 84	40 47	109 69	109 69	104 69	109	109	p 15, 1:(98)
54 55	Co Co	Reservation Greenville Gull Lake Exp.	43 42	11 24	85 85	15 23	46 30	46 30	46 30			
56 57	Co Co	Farm Gwinn Hale Five Chan- nels Dam	46 44	17 28	87 83	27 41	 46	46	Х 46			
58 59	Co Co	Harrison Hart	44 43	01 42	84 86	48 22	52 69	1	52 69			
60 61 62	Co Co	Hastings Fisher. Hesperia Higgins Lake	42 43 44	39 34 31	85 86 84	18 02 45	66 22 58	66 13 58	66 22 58			
63 64 65	Co Co	Hillsdale Holland	41 42	55 47	84 86	38 07	71 54	62 54	71 54	77	v	- 15 1 (4)
66	SO R	Houghton CAA Ap. Houghton Univ. of Michigan res.	47 47	10	88	30 29	6	6	6	X 1	Х	p 15, 1:(X) snow depth (1); radiation,
67			. 7	10	00	2.0	_	-		_	_	humd. and press. (1)
67	R	Houghton U.S. Army Sig. Corps	47	12	88	30	5	5	5	5	5	min. and max temp., hum., (5)
68	Со	Houghton Lake 3 mi. NW	44	20	84	49	44	44	44			
69 70	Co Co	Howell Sewage Pl. Howell 7 mi. NE	42	36	83 83	56 53	53 9		53			
71	Co	Hubbard Lake Dam	44	51	83	36			Х			
72	Со	Interlochen State Park	44	38	85	46	16		16			
73 74	Co Co	Ionia Gas Plant Iron Mtn. Water Works	42 45	59 50	85 88	04 04	28 59	28 59	28 59			
75	Со	Ironwood	46	27	90	10	57	57	57			
76 77	Co SO	Ishpeming Jackson CAA Ap.	46 42	29	87 84	39 28	60 62	60 62	60 62	Х	х	- 15 1.(V)
78	Co	Jackson 3 mi. N	42	17	84	24	18	02	18	Λ	^	p 15, 1:(X)
79	Со	Kalamazoo Power Plant	42	18	85	34	18		18			
80	Co	Kalamazoo State Hospital	42	17	85	36	83	83	83			
81 82	Co	Kalkaska Kent City 2 mi. SW	44 43	12	85 85	10 46	19 39		19 39			
83	Со	Kenton U.S. For.	46	29	88	53	18	18	18			
84	FO	Kinross AFB	46	15	84	28	5	5	5	Х	Х	p 15, 1:(X)
85 86	Co Co	Lapeer Lowell 5 mi. NW	43 42	03 59	83	20 25	 44	Х	15 44			

No.	Class	Location	Lat deg		Long deg		Per of Rec	Temp Yrs	Pcpn Yrs	Wind Yrs	Wea Yrs	
		MICHIGAN cont.										
87 88	Co Co	Lupton Lupton 1 mi. SW	44 44	26 25	84 84	02 02	8	7	8 7	7		evaporation
89	Со	Millington 3 mi.	43	14	83	34	57		57			(7)
90	Со	Mio Hydro. Plant	44	40	84	08	55	55	55			
91	Co	Montague	43	25	86	22	8	8	8			
92	Co	Montague 2 mi. N	43	27	86	21	16	į	16			
93	Co	Mt. Pleasant Col.	43	36	84	47	58	58	58			
94	Со	Newaygo Croton Dam	43	27	85	40	51	51	51			
95	Со	Newberry State Hospital	46	20	85	30	60	60	60			
96	Co	Niles	41	51	86	16	2	į	2			
97	FO	Oscoda AFB	44	28	83	22		Х	Х	Х	Х	p 15, 1:(X)
98	Со	Onaway Black L. Forest	45	25	84	14	15		15			
99	Co	Owosso Swg. Plant	43	01	84	11	63	63	63			
100	Co	Paw Paw 2 mi. E	42	13	85	51	38	38	38			
101	SO !	Pelston CAA Ap.	45	34	84	48	17	17	17	Х	Х	p 15, 1:(X)
102	Со	Pontiac	42	39	83	18	71	71	66			
103	Со	Rexton	46	10	85	15	6	6	6			
104	Co	Rock	46	04	87	10	18		18			
105	Co	Romeo 1 mi. N	42	49	83	01			24			
106	Со	Roscommon Forest Exp. Station	44	28	84	35			Х			
107	Co	Rose City	44	26	84	07	8		8			
108	Со	Saginaw Center Radio Station	43	29	84	02	3	3	3			
109	SO	Saginaw-Midland- Bay City CAA Ap.	43	32	84	05	62	62	62	Х	Х	p 15, 1:(X)
110	Co	St. Charles	43	18	84	08	17	6	17			
111	Со	St. Johns 5 mi.	43	04	84	35						
112	Co	Sandusky	43	25	82	50	40	40	40			
113	Со	Scottville 1 mi. NE	43	58	86	16	34		34			
114	Со	Sebewaing 3 mi. E	43	44	83	23			17			
115	Co	Spalding	43	43	83	27			5			
116	Co	Stambaugh	46	05	88	38		63	l .			
117	Co	Standish 2 mi. S	43	57	83	58		25	1			
118	Co	Stanton	43	17	85	04			3			
119	Со	Stephenson 5 mí.	45	24	87	43		Х	19			
120	Co	Steuben 2 mi. WNW	46	12	86	30	19		19			
121	Co	Suttons Bay 4 mi.		01	85	42		1	19			
122 123		Thompsonville Three Rivers	44	31 56	85 85				19 62			

No.	Class	Location		t N min	Lon		Per	Temp Yrs	Pcpn Yrs	Wind Yrs	Wea Yrs	
		MICHICAN			-		Rec					
		MICHIGAN cont.										
124	Со	Trout Lake 2 mi.	46	11	84	59			Х			
125	Со	Vanderbilt Trout Station	45	10	84	27	46	46	46			
126	Со	Wakefield	45	29	89	55	16		16			
127	Со	Watersmeet Fish Hatchery	46	18	89	05	20	20	20			
128	Со	Wellston Tippey Dam	44	15	85	57	38		38			
129	Со	West Branch State Forest	44	20	84	17	56		56			
130	Со	Williamston 1 mi. NE	42	41	84	16	22		22			
131	Со	Willis 1 mi. NE	42	05	83	35	29	29	29			
132	Со	Yale	43	08	82	48	32		32			
		OHIO										
1	FO	*Akron-Canton Ap.	40	55	81	26	11	11	11	11	11	p 15, 1:(11)
2	FO	*Akron Municipal Airport	41	02	81	27		30	30	25		p 15, 1: (25)
3	Co	*Akron Swg. Wks.	41	09	81	34	1		1			
4	Со	*APCO Ravenna Arsenal	41	10	81	05	11	11	11			
5	Co	*Ashland 2 mi.ENE	40	54	82	18			49			
6	Co	*Ashland 3 mi. NW	1	53	82	22		56	58			
7	Co	Ashtabula	41	51	80	48		8	8			
8 9	Co	Botzum Swg. Plant Bowling Green	41 41	09 23	81 83	34 38		64	18 77			
10	Co	Sewage Plant Bucyrus Swg. Pl.	40	48	82	58	65	63	65			
11	Co	Burton	41	29	81	09			9			
12	Со	*Canton Reposi-	40	48	81	23		6	6			
13	Co	tory *Canton Hwy. Dpt.	40	48	81	22	19		19			
14	Co	Chardon	41	35	81	12	13	13	13			
15	Co	*Charles Mill	40	44	82	22	18	18	18	х		evaporation (X)
16	Со	*Chippewa Lake	41	05	81	54	63	63	63			
17	FO	Cleveland Airport	41	24	81	51	32	32	32	32	32	
18	FO	Cleveland City	41	30	81	42	88	88	88	88	88	p 15, 1: (88)
19	Со	*Columbus Ohio	40	00	83	01	74	74	74	Х		evaporation (X)
20	Co	State Univ. *Columbus	39	56	83	05	8	8	8			(46)
20		Sullivant Ave.										
21	Со	*Columbus Valley Cross	39	56	82	57	42	42	42			
22	FO	*Columbus Airport	40	00	82	53	28	28	28	28	28	p 15, 1:(28)

No.	Class	Location	Lat deg		Long deg		Per of Rec	Temp Yrs	Pcpn Yrs	Wind Yrs	Wea Yrs	
		OHIO cont.					RCC					
23 24	FO Co	*Columbus City *Dayton	39 39	58 45	83 84	00 10	79 23	79 23	79 23	79 X	79	p 15, 1:(79 evaporation (X)
25 26	FO Co	*Dayton Airport Defiance	39 41	54 17	84 84	12 23	28 54	28 48	28 54	28	28	
27 28 29	Co Co	Defiance Pwr. Pl. Dorset 2 mi. E Edgerton	41 41 41	17 41 27	84 80 84	28 38 44	17 2 17	2	17 2 17			
30 31	Co Co	*Ellsworth Elyria 3 mi. E	41	01 23	80 82	51 04	43 10	10	43 10			
32	SO Co	Findlay CAA Ap. Findlay Swg. Pl.	41	01	83 83	40 40	17 69	X 69		Х	Х	p 15, 1:(X)
34 35 36	Co Co	Fremont *Galion Wtr. Wks. *Hiram	41 40 41	20 43 19	83 82 81	07 47 09	18 12 78	6 74	18 12 78			
37	Со	Hoytville 2 mi. NE	41	12	83	47	7	7	7			
38	Со	Kenton Ohio Pwr.	40	38	83	37	17		17			
39 40	Co	*Kenton 2 mi. W *Lakeview 3 mi. NE	40 40	39 32	83 83	39 54	66 42	65	66 42			
41 42	Co	*La Rue Lima Swg. Plant	40 40	34 43	83 84	23 07	40 59	56	40 59			
43 44	Co R	Lima Water Works Lima Standard Oil Co.	40 40	45 44	84 84	05 08	17 	х	17 X	х		
45	Co	*Louisville Lyons High School	40 41	50 42	81 84	16 04	12 18		12 18			
47	Со	*Mansfield 6 mi.	40	45	82	38	59	39	59			
48 49 50	SO Co	Mansfield CAA Ap. *Marion Wtr. Wks. *Marshallville	40 40 40	47 36 54	82 83 81	32 10 43	15 10	X X	X 15 10	X	Х	p 15, 1:(X)
51 52	Co	Montpelier Napoleon	41 41	35 23	84	36 07	67	56 64	67 72			
53 54	Co Co	Norwalk Oberlin	41 41	15 17	82 82	37 13	74 82	64 74	74 82			
55	Co	Painesville Hwy. Department Pandora 2 mi. NE	41	43   58	81	13 51	19 17	17	19 17			
57 58	Co	Paulding Plymouth	41 41	08	84 82	35	68 25	63	68 25			
59	Со	Rockford 5 mi. WNW	40	42	84	45	4		4			
60	Со	Rockford 0.3 mi.	40	38	84	48	19		19			
61	Co	St. Marys 2 mi.W St. Marys Water Works	40	32 32	84 84	25 24	20		20 21			

No.	Class	Location	Lat deg		Long deg		Per of Rec	Temp Yrs	Pcpn Yrs	Wind Yrs	Wea Yrs	Other (ref:yrs)
		OHIO cont.					Nec					
63	Со	S. New Lyme 1 mi.	41	35	80	46	12		12			
64	Co	Tiffin	41	07	83	10	77	72	77			
65	FO	Toledo Exp. Ap.	41	36	83	48	4	4	4	4	4	p 15, 1: (4)
66	Со	Toledo Blade	41	39	83	32		7	7			
67	FO	Toledo City	41	40	83	34		85		85	85	p 15, 1:(85)
68	Co	Upper Sandusky	40	50	83	17	75	74				
69	Со	Upper Sandusky Water Works	40	49	83	17	18		18			
70	Co	Van Wert	40	52	84	35	44	43	44			
71	Co	*Warren	41	15	80	51	69	65	69			
72	Со	*Warren Ohio Edison	41	13	80	48	24		24			
73 74	Co FO	Wauseon Sewage PL *Youngstown Ap.	41 41	33 16	84 80	08 40		88 87	86 16	16	16	p 15, 1:(16)
		PENNSYLVANIA										
1	Со	*Coudersport 3 mi. NW	41	49	78	03	3	3	3			
2	Со	*Coudersport 7 mi. E	41	46	77	53	12		12	1		
3	Co	*Linesville	41	41	80	31	41	7	41			
4	Со	North East 2 mi. SE	42	12	79	49	9		9			
5	Co	Springboro	41	48	80	23	4	4	4			
		NEW YORK										
1	Co	Albion 3 mi. NE	43	16	78	08	21	21	21			
2	Co	Alexandria Bay	44	20	75	55	27	23	27			
3	Со	Alfred	42	15	77	47	66	62				
<b>4</b> 5	Co Co	Angelica Arcade	42	18	78	02	74	74 7	74		· j	
6	Co	Arnot Lodge	42 42	32 16	78 76	25 38	36 4		36 4		- 1	
7	Co	Arnot SCS	42	14	76	37	11		11		Ì	
8	Co	Auburn Wtr. Wks.	42	54	76	32	95	95	89	X	Į	
9	Co	Aurora Research Farm	42	44	76	39	2	2	2	2		evaporation (2)
10		Avon	42	55	77	45	63		63			
11	Со	Baldwinsville	43	09	76	20	60	21	60			
12	Co	Batavia	43	00	78	11	28	28	28			
13 14	Co	Beaver Falls Big Moose 3 mi.	43 43	53 49	75 74	26 52	25 28		25 28			
15	FO	*Binghamton	42	13	75	59	8	8	8	8	8	p 15, 1:(8)
16	Co	*Binghamton	42	06	75	55	69	69	69			-
17	Co	Black R. 1 mi. SW	44	00	75	49	19		19			

No.	Class	Location	Lat deg		Lon		Per of Rec	Temp Yrs	Pcpn Yrs		Wea Yrs	Other (ref:yrs)
		NEW YORK cont.					Kec					
18	Co	Boonville 2 mi. N	43	31	75	21	36		36			
19	Со	Boonville 2 mi.	43	27	75		10	10	10	Х		evaporation
20	Со	Brewerton Lock 23	43	14	76	12	27		27			(X)
21	Со	Bristol Springs	42	43	77		27	-	27			
22	Co	Brockport 2 mi.	43	15	77		9	9	9			
23	FO	Buffalo Airport	42	56	78	44	108	108	102	88	88	p 15, 1:(88
24	Co	Burdett 1 mi. NE	42	25	76	50	27	100	27		"	p 13, 1. (00
25	Co	Camden	43	20	75	44	13	i	13			
26	Со	Canandaigua 3 mi.	42	51	<b>7</b> 7		27	25	27			
27	Co	Canaserage	42	28	77		5		5			
28	Со	Canastota l mi. SW	43	04	75	45	27		27			
29	Со	*Candor	42	14	76	1	15		15			
30	Со	*Canton	44	36	75	10	97	97	92			
31	Co	Cayuga Lock 1	42	57	76	44	32	Ì	32			
32	Со	Churchville	43	06	77	53	5		5			
33		*Cincinnatus	42	32	75	54	22		22			
34	Со	Clyde Lock 26	43	04	76	50	41		41			
35		Colden	42	40	78			X	X			soil temp.(
36	i	*Colton 3 mi. N	44	35	74	57	25		25			
37	Со	Constantia	43	15	76	00	7		7			
38	Со	*Cortland	42	36	76	11	98	98	81			
39		Dansville	42	34	77	42	41	38	41			
40		Delta	43	17	75	27	40		40			
41		Eagle Bay	43	46	74	49	6		6			
42		Eagle Falls	43	54	75	11	34		34			
43		*East Homer 1	42	42	76		19		19			
44		*East Homer 2 Elma	42 42	43 51	76 78	07 39	10 17	17	10 17	6		evaporation (6)
46	Co	*Elmira	42	05	76	48	80	79	80			(0)
47	so	Elmira CAA Airport	42	10	76	54	19	11	19	Х	X	p 15, 1:(X)
48		Forestport	43	26	75	13	25		25			
49	Co	*Franklinville	42	21	78	27	10	10	10			
50	Co	Fredonia	42	26	79	22	72	72	63			
51	Co	Freeville 2 mi.NE	42	32	76	19	19		19			
52	Co	Fulton	43	19	76	25	33		33			
53	Co	Garbutt	43	01	77	47	5		5			
54		Geneva Exp. Sta.	42	53	77	00	70	89	70			
55	FO	Geneva Sampson AFB	42	50	77	00		Х	Х	Х	X	p 15, 1:(X)
56	Co	Gouverneur	44	20	75	28	53	22	53			
57	Co	Gowanda St. Hosp.	42	29	78	56	14	13	14			
58	Со	Gravesville 2 mi.	43	16	75	07	9	9	9			humidity (X
59	Со	Hammondsport 1 mi	42	24	77	13	5		5			

No.	Class	Location	Lat deg		Lon deg		OL	Temp Yrs	Pcpn Y <b>r</b> s	Wind Yrs	Wea Yrs	Other (ref; yrs)
		NEW YORK cont.					Rec					
		Tomic cone.										
60		Hemlock	42	47		37	61	1	61			
61		Highmarket	43	35		31	35	1	35			
62	Со	Highmarket 1 mi.	43	35	75	30	19		19			•
63	Co	SE Hilton	43	17	77	47	14	14	14			
64	Со	Hinckley	43	18	75	07	41		41			
65	Co	*Hoffmeister	43	23		43	53	1	53			
66		Honeoye Falls	42	57	,	35	5		5			
67		Hooker	43	41		45	27		27			
68		Hornell Almond	42	21	77	42	5		5		1	
		Dam										
69	Со	*Indian Lake 2 mi. SW	43	45	74	17	60	59	60			
70	Co	Ithaca Cornell Univ.	42	27	76	28	41	27	40	41		evap. (41), sunshine (X) pressure (X)
71	Со	*Lincklaen	42	41	75	53	6		6			pressure (n)
72		Linden	42	52	78	10	40		40			
73		Locke 4 mi. W	42	40	76	28	27		27			
74	Co	Lockport 2 mi. NE	43	11	78	39	73	67	73			
75		Lowville	43	48	75	29	98	93	98			
76	Co	Lyons Falls	43	37	75	22	45		45			
77		Macedon	43	04	77	18	40		40			
78		Marcellus SCS	42	59	76	23	19		19			
79		Mays Pt. Lock 25	43	00	76	46	40		40			
80		Mt. Morris 2 mi. W		44	77	54 06	9 39	9	39			
81 82		Newark Newark Valley	43 42	03 13	76	12	39		4			
83		New London Lock 22		12		37	39		39			
84		Ogdensburg Hosp.  3 mi. NE	44	44	75	27	68	68	66			
85	Co	Old Forge 2 mi. SW	43	42	75	00	12	11	12	1		
86		Ovid	42	40		50	27	1	27			
87		Penn Yan	42	39	77	04	107		107			
88		Prattsburg 2 mi.	42	32		18	18		18			
		NW										
89		Pulaski	43	34	76			X	X			
90		Rochester Airport	43	07	77	20	130		130	88	88	p 15, 1:(88)
91		Rome Griffiss AFB	43	14		25	16	16	16	16	16	p 15, 1:(16)
92		Rushford 3 mi. SW	42	22		18	5		5			
93 94		Sabattis 3 mi. NE	44 44	07		40 38	26 3	3	26 3			
94	Со	Sabattis Whitney Park	44	03	/4	20	ا	,	,			
95	Co	Saranac Lake	44	19	74	07	29	29	29			
96		Scio	42	10		59	30		30			
97		Sherman	42	10		36	8		8			
98		Skaneateles	42	57		26	65		65			
99		Sodus 2 mi. SSW	43	13	77	04	30	30	30			
100	Со	S. Edwards 1 mi.	44	16	75	12	32		32			
		E										

No.	Class	Location	Lat deg	N min	Long	g W mir	Per of Rec	Temp Yrs	Pcpn Yrs	Wind Yrs	Wea Yrs		her :yrs)
		NEW YORK cont.											
101	Co	S. Wales Emery Pk.		43	78	36	28	28	28				
102	Со	Stafford	42	59	78	05	28		28				
103	Co	Stillwater Reserv.	1	53	75	02	38 71	32 71	38 62	62	63	- 15	1. (62)
104	FO	Syracuse Airport Theresa	43	07 13	76	47	18	/1	18	02	62	р 15,	1: (62)
105 106	Co	*Troupsburg 4 mi.	42	04	77	29	18		18				
107	Co	Truxton	42	43	76	02	19		19				
108	SO	Utica CAA Airport	43	09	75	23	19	Х	19	Х	Х	р 15,	1:(X)
109	Co	Wales	42	45	73	31	17		17				
110	Со	Wanakena Ranger School	44	09	74	54	49	48	49				
111		Warsaw 5 mi. SW	42	41	73	12	7	7	7				
112		Waterloo	42	54	76	52	36		36				
113		Watertown	43	58	75	52	69	67	69				
114		Wellsville	42	07	77	57	3	20	3				
115 116		Westfield 2 mi. SW Whitesville	42 42	17 02	79	37	43	38	43				
117		Wiscoy	42	30	78	05	19	19	5 19				
118		Wolcott	43	14	46	49	20	19	20				
		ONTARIO					) - <del>X-X-</del>	! - <del>%-</del> %	**	! - <del>**</del>	<del>%</del> ⊹⊹	! **	
1	II	Agincourt	43	47		16		X	X	50			
2		Aldershot	43	18	79	54			X				
3		Aldershot (HEPC)	43	18	79	52		X	X				
4		Algonquin Park	45	35	73	33		31	31				
5		Alliston	44	08	79	58			X				
6		Alloa	43	43	79	52		F 1	X				
7 8		Alton	43 44	51	80	05		51 X	51 X				
9		Angus Apsley	44	46	79 78	05		X	X				
10		Armstrong	50	18	83			24	24	.94	х	n 15	1: (X)
11		*Atikokan	48	44		38		34	34	1,74	/ L	р 15,	1. (11)
12		Barrie	44	24		41		56	56				
13		*Bear Island	46	59	1	05		X	X			1	
14		Beatrice	45	08		16		63	66				
15		Beaverton	44	25		09		Х	Х				
16		Beeton	44	06	1	47		Х	Х				
17		Benny	46	31		38			X				
18		Bingham Chute	46	06		24		X	X				
19		Biscotasing	47	17		07		34	34				
20		Black Sturgeon Lk.	49	20		50		X	Х				
21		Bradford	44	06		30		X	X				
22		Brampton	43	41	1	46		X	X				
23		Brantford	43	08		16		62	62				
24	)	Brockville	44	33	i .	40		33	X				
26		Broddytown	43	37	1	36		A.C	X				
20	II	Brucefield	43	33	81	33		45	45				

\*\* See Appendix II, p. 160

No.	Class	Location	Lat deg		Long		Per of Rec	Temp Yrs	Pcpn Yrs	Wind Yrs	Wea Yrs	Other (ref:yrs)
		ONTARIO cont.										
							**	**	**	**	**	**
27		Burnhamthorpe	43	37	79				X			
28		Caledonia	43	06	79	57		X	X			
29		Cameron Falls	49	09	ı	21		25	25		1	
30		Campbellford	44	18	77	48			X			
31	1	Canboro	42	59	79	35		X	X			
32	Į.	Caramat	49	37	86	09		X	X			
33	)	Centralia	43	18	81	31		X	X	X	X	p 15, 1:(X
34	I	*Chalk River	46	00	77	26		20	21	50	X	sunshine
								1				(21);
								!				p 15, 1:(X)
35		Chapleau	47	50	83	25		35	35			
36	II	Chatham	42	23	82	12		59	71			sunshine
												(21)
37		Chatham (CFCO)	42	23	82	12		X	X			
38		Chatsworth	44	24	80	54			X			
39		Clarkson	43	33	79	37		X	X			
40		Clear Creek	42	35	80	34		X	X	X	X	p 15, 1:(X
41		Clifford	43	57	80	58			77			
42		Coe Hill	44	53	77	50		Х	X			
43	II	Coldwater	44	42	79	40		X	\7 2h			
44	II	Coniston	46	28	80	49		X	X			
45	II	Crystal Falls	46	27	79	55		X	X			
46	II	Delhi	42	52	80	32		Х	Х			sunshine
, ,		D 7 1 D	, ,	0.5		20			**			(21)
47		Dog Lake Dam	48	05	89	38			Х			
48		*Domville	44	47	75	32			Х			
49		Dona	48	30	89	31			Х			
50		Doon	43	24	80	27			X			
51		Dorset	45	15	78	53		X	Х			
52		Dunnville	42	55	79	42			Х			
53		Durham	44	13	80	48		X	Х			
54		*Earlton	47	42		1 1		16	16	60	X	p 15, 1:(X
55		Eugenia	44	18	80	33			34		,	
56		Fenelon Falls	44	23	78	44			X			
57		Fergus	43	48	80	20		X	К			
58		*Foleyet	48	15	82	26		X	Х			
59		Forest	43	06	82	00		X	Х			
60		Franz	48	27	84		-~	30	30			
61		Galt	43	22	80	19		X	Х			
62		Georgetown	43	38	79	55		44	73			
63		*Geraldton	49	42	86			X	Х			
64		*Geraldton (HEPC)	49	46	86	57			Х			
65		Gilmour	44	51	77	56		X	X			
66		Glencoe	42	42	81	42		X	Х			
67		Gooderham	44	55	78			X	Х			
68	III	Gore's Landing	44	08	78	13			Х			
69	I	*Graham	49	16	90	35		Х	Х	X	X	p 15, 1:(X
70	III	Green River	43	54	79	11			Х			
71	III	Grey Co. Forest	44	07	80	48			Х			
72		Grimsby (Rock	43	09	1	42			Х			

Chapel)
\*\* See Appendix II, page 160.

No.	Class	Location	Lat deg	Lat N deg min		Lat N deg min		Lat N deg min		Lat N deg min		Lat N deg min		Lat N deg min		Lat N deg min		Lat N deg min		Lat N deg min		Lat N deg min		Lat N deg min		Lat N :		Lat N I		Lat N I		Lat N I		Lat N L		Lat N L		Lat N Lo		Lat N Long		Long W		ong W Re		Temp Yrs	Pcpn Yrs	Wind Yrs	Wea Yrs	1
		ONTARIO cont.					***	 <b>*</b> ∺	<b>!</b> ₩₩	<del>***</del>	 ***	] ->⇔>-																																						
73	II	Guelph	43	33	80	16		55	55	105		sunshine (34)																																						
74	III	Hagersville	43	00	80	03			Х																																									
75 76	II	Haliburton	45	01	78	28		57	57																																									
77	II	Haliburton (2) Harrow	45 42	03	78 82	29 53		X 31	Х 31			sunshine																																						
												(32)																																						
78	II	Helen Mine	48	04	84	45		X	X																																									
79	II	Holstein	44	03	80	46		X	Х																																									
80	III	Hopeville Hornby	44	05	80 79	34 50			X																																									
82	II	*Hornepayne	49	14	84	51		31	31																																									
83	II	Huntsville	45	19	79	15		41	41			5																																						
84	III	Ilderton	43	07	81	23			X																																									
85	II	Jarvis Lake	49	15	87	49		X	Х																																									
86	II	Kakabeka Falls	48	24		37		41	41																																									
87 88	II	Kemptville *Kenogami D <b>a</b> m	45 49	02 55	75 86	39 28		X	X	i																																								
89	II	Killala	49	09	86	28		Х	X																																									
90	I	*Killaloe	45	34	77	24		16	16	50	Х	p 15, 1:(X)																																						
91	II	Kohler	42	56	79	52		Х	Х																																									
92	II	Lafontaine	44	45		05		X	Х																																									
93	III	Lakeport	43	59	77	55			X			1.																																						
94	II	Lindsay	44	20	78	44		68	68			sunshine (68)																																						
95	II	Listowel	43	45		58		X	X																																									
96	I	London	43	02		09		65	65	52	X	p 15, 1:(X)																																						
97	II	*Longlac (P & P)	49 49	45 45	86 86	30 30		29 X	29 X																																									
99	II	Long Lake Control	49	05		03		X	X																																									
		Dam																																																
100	)	Long Point	42	33	80			Х	Х	45																																								
101	II	Lucan	43	11		24		X	X																																									
102	II	Lucknow Macdiarmid	43 49	58 26		31 09		58 X	58 X																																									
104	II	McVittie	46	17		52		X	X																																									
105	II	*Madawaska	45	30		59		X	X																																									
106	II	Magnetawan	45	40		38		X	X																																									
107	I	Malton	43	41	79	38		17	17	69	Х	humidity (X); p 15, 1:(X)																																						
108	II	Manitou Falls	49	12	86	06		Х	X			p 10, 1.(A)																																						
109	III	*Mattagami Lake	48	01		33			X																																									
		Dam																																																
110		Melville	43	55		03		X	X		1																																							
111	III	Meyersburg Midhurst	44	17 27		48 44		Х	X X																																									
113	III	Mildmay	44	03		07		Δ	X																																									
114	III	Miller Lake For.	45	05		25			X																																									
115	II	Millgrove	43	21	- 1	56		Х	X																																									
1161	III	Mink Lake	47	01	82	04			X																																									

See Appendix II, p. 160

No.	Class	Location	Lat deg	N min	Long		Per of Rec	Temp Yrs	Pcpn Yrs	Wind Yrs	Wea Yrs	
		ONTARIO cont.					**	**	**	**	**	**
117		M: 4 - 1 - 1 1	43	28	0.1	1,,						î î
118	II	Mitchell Montreal Falls	47	15	81	11 24		X	X			
119			47	07	79	29		X 37	X 37		1	
120	II	*Montreal River	48	50	Г			3/				
121		*Moose Lake		28	ı	36			X			
121	III	Morriston	43	58	•	1		16	X	5.2	v	15 1. (9)
123	I	Muskoka *Nakina	50	11	79 86	19 42		16	16	5 <b>2</b> 57		p 15, 1:(X)
143	1	"Nakilla	50	11	00	42		7.0	16	١٦/	Х	humidity (X); p 15, 1:(X)
124	II	North Bay	46	19	79	1		28	34			
125	I	North Bay (A)	46	22	79	25		6	16	60		p 15, 1:(X)
126	II	Oak Ridges	43	58	79	28		30	30	90		sunshine (29)
127	II	Oil City	42	55	82	02		K	X			
128	II	Orillia	44	37	1	24		49	49			
129	II	Orono	43	59	ľ	35		X	X			
130	I	*Ottawa (Uplands)		20		41		76	76	72		sunshine (53)
131	II	Oxaline Lake	49	42		34		X	X			
132	I	*Pagwa	50	02	r .	16		16	16	52	X	p 15, 1:(X)
133	II	Pays Plat	49	43	87	34		X	Х			
134	II	Pefferlaw	44	19		13		X	X			
135	II	Peshu Lake	46	37	83	10		X	X			
136	II	Peterboro	44	17	78	19		66	71			
137	III	Peterboro (HEPC)	44	20	78	19			X			
138	II	Peters Corners	43	17		04		X	X	[		
139	III	Petrolia	42	57		05			X			
140	III	Pine Portage	49	18		19			X	1		
141	II	*Port Elmsley	44 44	53 42	76	08 12		X	X			
142 143	II	Portland	43	40	- 1	25		X	X	1		
144	II	Preston *Quorn	49	25		05		33	X 33	I		
145	II	Ragged Rapids	45	01	1	40		X	X	l		
146	III	Ramsay	46	58		21		Λ	X			
147	II	Ranger Lake	46	55	1	30		Х	X	1		
148	III	Rayner	46	27	83			Λ	X			
149	III	Red Cedar Lake	46	41	80				X			
		Dam				-			^	-	- 1	
150	II	Redickville	44	13	80	13		Х	Х			
151	III	*Rideau Ferry	44	51	76	- 1			X			
152	II	Ridgetown	42	26		55		Х	x			
153	II	Ridgeville	43	04		08		Х	Х		- 1	
154	I	*Rockcliffe	45	28		38		14	14	Х	Х	p 15, 1:(X)
155	II	Ruel	47	18		27		33	33			
156	II	St. Catherines	43	09	79	17		33	32			sunshine (21)
157	II	St. Catherines (Path. Lab.)	43	10	79	17		Х	Х			
158	III	St. Joachim	42	10	82	38			X			
159	II	St. Thomas	42	48		11		X	х			
160	II	Sand Lake	47	47	84	32		Х	x			
161	III	Sauble Forest	44	41	81				Х			
162	III	Scotia Junction	45	31	79				x			
163	II	Simcoe	42	52	80	20		32	32			

<sup>\*\*</sup> See Appendix II, p. 160.

No.	Class	Location	Lat deg	N min	Lon	g V mir	Per of Rec	Temp Trs	Popn Ers	Wind Yrs	Wea Yrs	
		ONTARIO cont.					<del>***</del>	36-36	**	**	**	<del>***</del>
164	II	Smithfield	44	05	77	40		X	7.			
165	t .	Smoky Falls	50	04	82	1		X	X	•		
166	l .	Snelgrove	43	45	7-9	50			$\chi$			
167		Stayner	44	28	80	06		X	X		1	1
L68	1	Stirling	44	19	77	38		15	15	55	Х	p 15, 1:(X)
169		Stratford	43	23	81	00		X	X			
L70		Strathroy	42	58	81	38		X	X			
171		Sudbury	46	29	80	59		27	27	X	Х	p 15, 1:(X)
72	III	Talbotville	42	48	81	15		1	X			
73	III	Toronto (Downs-	43	43	79	29			X			
		view South)										
L74	II	Toronto (East York)	43	42	79	20		Χ	X			
175	III	Toronto (Glenview)	43	42	79	27			X			
L76		Toronto (Isling- ton West)	43	39		33		Σ	X			
177	III	Toronto (Kingsway)	43	39	79	31			X			
L78		Toronto (Scarlett Road)	43	40		30			X			
.79	II	Toronto (South Leaside)	43	42	79	22		X	Х			
180	III	Toronto (Wexford)	43	45	79	18		1	X			
.81		Toronto (Willow- dale)	46	47	79	26			Х			
.82	II	Toronto (Wilson Heights)	43	44	79	26		X	X			
83	III	Trethewey Falls	44	59	79	17		1	X			
.84	II	Turbine	46	23	81	34		34	34			sunshine (3
85	II	Tweed	44	30	77	19		Х	X			
.86		Unionville	43	52	79	20		1	Х			
87	II	*Upsala	49	03	90	28		X.	Х			
88	II	Uxbridge	44	07	79	06		X	X			
89	II	Vineland	43	10	79	19		X	X			sunshine (3
90	II	Walkerton	44	03	81	09		33	33 j	70		
91		Wallaceburg	42	35	82	24		41	41	ì		
92	1	Wasdells	44	47	79	18			X			
.93		Washago	44	35	79	20			X			
94		Waterford	42	58	80	17			Х			
95		Waterloo	43	28	80	27		X	X	}		
95		Welland	42	59	7.9	17		56	56			
97		White River	48	35	85	17		62	62	55		p 15, 1:(X)
98		Windsor	42	17	82	58		X	59	18	Х	p 15, 1:(X)
99		Woodbridge	43	50		36		Х	Х			
00		Woodslee	42	13	82	42		X	X			
.01	II	Woodstock	43	08	80	47		76	76			sunshine (5

## Table 3. Unusable Data Sources.

The facilities listed in Table 3 are those that were uncovered by the project but which were adjudged to be unsuitable for inclusion in Tables 1 or 2. One of three situations described the reason for deletion. Most of the sources were contacted, but the data recorded by the installations were of such short record or of such a nature that there was no immediate future use deemed possible for it by the investigators. These cases are listed in the first column. In a few cases, data of interest to the project are taken, but for technical reasons, such as intake location or instrument exposure, they were considered unrepresentative. These are shown in the second column. In a few cases the existence of potential data sources was determined, but for a variety of reasons no contact with source authorities was possible. Only 16 cases of this type occurred -- 1.4 per cent of the total of 1177 sources.

Table 3. Unusable Data Sources

Location	Installation	Few or No Data	Data Not Repres.	No Con- tact
Red Rock, Ont.	St. Lawrence Corp.			X
Port Arthur, Ont.	Abitibi Pulp & Paper Co.			X
Port Arthur, Ont.	Provincial Paper Co.			X
Grand Marais, Ont.	water treatment plant			X
Two Harbors, Minn.	municipal power plant			X
Ontonagon, Mich.	water treatment plant	X		
Eagle River, Mich.	water treatment plant	X		
Eagle Harbor, Mich.	water treatment plant	X		
Copper Harbor, Mich.	water treatment plant	X		
Gay, Mich.	water treatment plant	X		
Pequaming, Mich.	water treatment plant	X		
Sault Ste. Marie, Ont.	Algoma Steel Co.			X
Nahma, Mich.	water treatment plant	X		
Waukegan, Ill.	Commonwealth Edison Co.	X		
Great Lakes NTS	power plant	X		
Winnetka, Ill.	municipal power plant			X
East Chicago, Ind.	water treatment plant			X
Indiana Harber, Ind.	Youngstown Sheet & Tube Company	X		
Ludington, Mich.	Dow Chemical Co.		X	
Muskegon, Mich.	Consumers Power Co.		X	
Essexville, Mich.	Consumers Power Co.		X	
Traverse City, Mich.	municipal power plant	X		
Alpena, Mich.	Huron Portland Cement Co.			X
East Tawas, Mich.	water treatment plant	X		
Lorain, Ohio	National Tube Co.	X		
Painesville, Ohio	Industrial Rayon Corp.			X
Ashtabula, Ohio	Union Carbide and Carbon Corp.			X
Erie, Penn.	Pennsylvania Elec. Co.	X		
Dunkirk, N. Y.	water treatment plant	X		
Buffalo, N. Y.	water treatment plant	X		
Buffalo, N. Y.	Republic Steel Co.	X		
Wilson, N. Y.	water treatment plant	X		
Newfane, N. Y.	water treatment plant	X		
Barker, N. Y.	water treatment plant	X		
Lyndonville, N. Y.	water treatment plant	X		
Brockport, N Y.	water treatment plant	X		
Hilton, N. Y.	water treatment plant	X		
Williamson, N. Y.	water treatment plant	X		
Sodus Point, N. Y.	water treatment plant	X		
Wolcott, N. Y.	water treatment plant	X		
Oswego, N. Y.	water treatment plant	X		
Sacketts Harbor, N. Y.	water treatment plant	X		
Oshawa, Ont.	General Motors of Canada			X
Oshawa, Ont.	Oshawa Public Utilities			X
Hamilton, Ont.	Steel Co. of Canada			X
(unknown)	Upper Peninsula Generating Co.			X
(unknown)	Produce Terminal Co.			X

The entire Great Lakes drainage basin was reviewed for sources of hydrographic and meteorological data, potentially applicable to studies of Great Lakes hydrography and fisheries. Agencies which were found to obtain either or both of these types of data were: water treatment plants; power plants; industrial concerns; U. S. Coast Guard; paper mills; Sanitary District Observers; U. S. Weather Bureau First Order, Second Order and Cooperative stations; Canadian Meteorological Division Class I, II, III, and c stations; U. S. Lake Survey; Canadian Hydrographic Service; U. S. Geological Survey; Canadian Department of Northern Affairs and National Resources, Water Resources Branch; independent research installations; and several miscellaneous uncategorized agencies.

Tables 4 and 5 present a summarization of knowledge of data sources appearing in Tables 1, 2, and 3. Table 4, entitled Summary of Knowledge of All Potential Data Sources, indicates the number and per cent of agencies contained within each source type that have usable or unusable data and those agencies with which no contact was possible (no contact). Following the format utilized throughout this report, these agencies have been categorized as either onshore or inland. Entries appearing in the usable column have been derived from Tables 1 and 2. Entries in the unusable column have been derived from the first two columns of Table 3, and entries in the no contact column, from the third column of Table 3.

For example, 97 water treatment plants were located which utilize Great Lakes water. These plants constituted 8.3 per cent of the total potential sources located. Of these, 73 (75 per cent) possessed usable data, 22 (23 per cent) possessed no data of use to the purposes of this investigation, and 2 (2 per cent) could not, for various reasons, be adequately ascertained.

A total of 1177 separate possible data sources were located in the drainage basin. Of the total, slightly less than half (44.2 per cent) are located within two miles of the Lake shores (onshore), whereas 55.8 per cent are more than two miles from the shoreline (inland).

A high percentage of all onshore agencies have proved to possess apparently usable meteorological and/or hydrographic data, namely, 91 per cent; only 6 per cent of the reviewed data is unusable and 3 per cent is for plants with which no contact was established.

The percentage distribution of onshore agencies by type of installation is of interest as shown in Table 4. The Coast Guard, meteorological substations, and water treatment plants all represent, numerically, data sources of the same order of magnitude. The numbers of data to be found in power plants and industries, and from the U. S. Lake Survey and the Canadian Hydrographic Service are each about half of the percentage represented by the aforementioned three source types. Other meteorological sources and the Sanitary District Observers are, in turn, nearly equal and each less than half the percentage of the latter two source types. There are very few paper mills, research, and special organizations that were uncovered as data sources by the project (together about 1 per cent of the total).

Table 4

Summary of Knowledge of All Potential Data Sources

	_							
TYPE OF INSTALLATION		ABLE . %	UNUS.		N CON No.	TACT	TO No.	TAL %
ONSHORE								
Water treatment plants	73	75	22	23	2	2	97	8.3
Power plants and industries	34	62	10	18	11	20	55	4.7
U. S. Coast Guard	124	100	0	0	0	0	124	10.5
Paper mills	3	50	0	0	3	50	6	0.5
Sanitary District Observers	21	100	0	0	0	0	21	1.8
U. S. Weather Bureau 1st & 2nd Order, U.S. Naval & Air Force Bases, Canadian Meteorologica Division I		100	0	0	0	0	24	2.0
U. S. Weather Bureau Coopera- tives, Canadian Meteorologi- cal Division II, III, c	132	100	0	0	0	0	132	11.2
U. S. Lake Survey, Canadian Hydrographic Service	55	100	0	0	0	0	55	4.7
Other (research, individuals)	6	100	0	0	0	0	6	0.5
TOTAL ONSHORE	472	90.8	32	6.2	16	3.0	520	44.2
INLAND								
U. S. Weather Bureau 1st & 2nd Order, U.S. Naval & Air Force Bases, Canadian Meteorological Division I		100	0	0	0	0	67	5.7
U. S. Weather Bureau Coopera- tives, Canadian Meteorologi- cal Division II, III, c	585	100	0	0	0	0	585	49.7
Research installations	5	100	0	0	0	0	5	0.4
TOTAL INLAND	657	100	0	0	0	0	<b>6</b> 57	55.8
TOTAL ONSHORE AND INLAND SOURCES	1129	95.9	32	2.7	16	1.4	1177	100.0

The 657 inland sources are, with the exception of five research installations, U. S. Weather Bureau, U. S. Naval Air, U. S. Air Force, or Canadian Meteorological Division stations. Data for all stations are usable, and all except those taken by the research groups are published.

The USWB Cooperatives and CMD Class <u>II</u>, <u>III</u>, and <u>c</u> stations comprise by far the largest single source of data ascertained by the project. This source represents half of the total number of hydrographic and meteorological stations existing within the Great Lakes watershed. Data recorded by these stations, while few in variety, are basic to future studies that may examine applicability of meteorological parameters to hydrographic and fisheries problems.

Table 5, entitled Summary of Knowledge of Usable Data Sources, presents a breakdown of sources from which data of apparent use to studies of Great Lakes hydrography and meteorology are available. Entries in this table have, as in Table 4, been categorized as onshore or inland, and are presented in terms of absolute number and per cent of total for each type agency.

The principal difference between Table 5 and Table 4 is the effect of the 47 water and power plant installations for which there were few usable data or with which no contact was established. These are not accounted for in Table 5 which shows the percentage distribution for usable data sources only. The reduction in numbers is reflected by the drop from 8.3 per cent in Table 4 to 6.5 per cent of the total in Table 5. Power plant and industries percentage took an even greater proportionate drop since 21 of the 55 plants possessed few usable data or else no contact could be established with plant personnel.

The results of this investigation are displayed in Tables 1, 2, and 3. The following data sources are not included in the Tables for reasons given on p. 110:

- 1. River discharge information obtainable from the U. S. Geological Survey and Canada Department of Northern Affairs and National Resources.
- 2. Information relating to meteorological observations obtained by lake freighters and other vessels.

Table 1 lists the sources of usable hydrographic and/or meteorological data that are located within two miles of the lake shores.

Table 2 lists the sources of usable meteorological data located more than two miles from the lake shores, but within the confines of the Great Lakes drainage basin. There are certain exceptions, namely, 126 U.S. Weather Bureau and Canadian Meteorological Division weather stations which lie just outside the limits of the drainage basin, but have been included in the compilation to provide more complete coverage in certain areas.

Table 3 lists the potential sources which were investigated and found to possess no usable data. This table also includes those agencies with which suitable liason or contact could not be established.

43.5

Table 5 Summary of Knowledge of  $\underline{\text{Usable}}$  Data Sources

TYPE OF INSTALLATION	FREQUENCY OF No.	USABLE DATA SOURCES %
ONSHORE		
Water treatment plants	73	6.5
Power plants and industries	34	3.0
U. S. Coast Guard	124	11.0
Paper mills	3	0.3
Sanitary District Observers	21	1.9
U. S. Weather Bureau 1st & 2nd Order, U. S. Naval & Air Force Bases, Canadian Meteorological Division I	24	2.1
U. S. Weather Bureau Cooperatives, Canadian Meteorological Division II, III, c	132	11.7
U. S. Lake Survey, Canadian Hydrographic Service	55	4.9
Other (research, individuals)	6	0.5
TOTAL ONSHORE	472	41.9
INLAND		
U. S. Weather Bureau 1st & 2nd Order, U. S. Naval & Air Force Bases, Canadian Meteorological Division I	67	5.9
U. S. Weather Bureau Cooperatives, Canadian Meteorological Division II, III, c	585	51.8
Research installations	5	0.4
TOTAL INLAND	657	58.1
TOTAL ONSHORE AND INLAND SOURCES	1129	100.0

Figure 8 is a histogram of the information contained in Table 4. The contribution of each type of data source is shown by percentage frequency distribution. The open portion of each bar indicates the percentage of usable sources, and the shaded portions indicate the percentages of unusable and "no contact" sources.

Figure 9, also a histogram, summarizes the percentage of usable, unusable, and no contact sources for (1) the onshore sources, (2) the inland sources, and (3) the total sources for the entire drainage basin.

A bibliography is appended to this report which gives references on the subjects of hydrography and meteorology as they pertain to potentially applicable scientific problems of the Great Lakes.

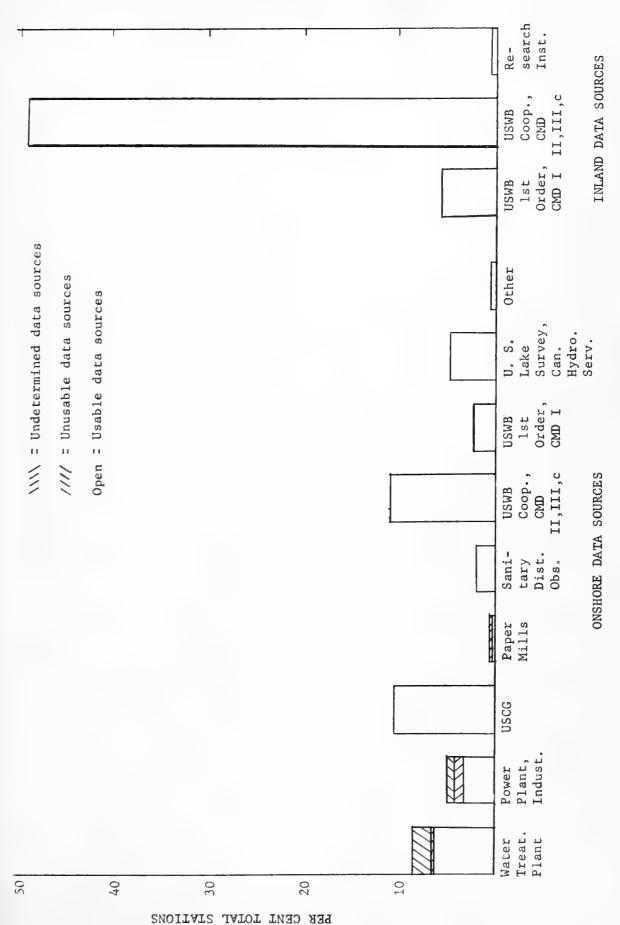
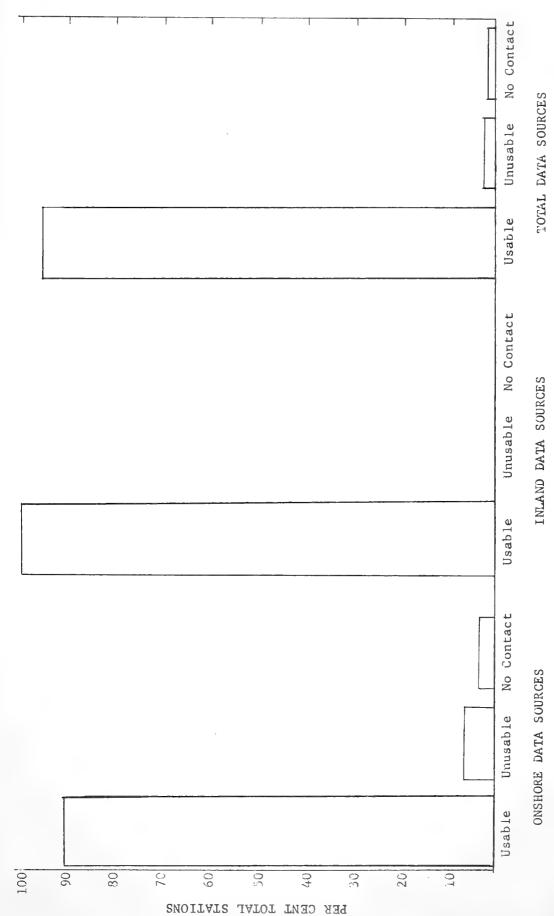


Figure 8. Per cent frequency of all potential data sources.



Summary of knowledge of all potential data sources. Figure 9.

## Appendix I

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#### APPENDIX II

# INDEX AND PERIOD OF RECORD FOR METEOROLOGICAL STATIONS IN OMTARIO JULY 1958

This appendix contains listings of all Ontario stations that make observations of the following meteorological elements:

1. Wind

3. Temperature

2. Sunshine

4. Precipitation

This index should be used as a supplement to the information on Ontario stations given in tables 1 and 2. There are many more stations reported here than are listed for Ontario in the two tables, because the tables were prepared to show only stations within the Great Lakes Drainage Basin. In this regard, the symbols OS, DB, DB\*, and Out are used in the Notes column of the Appendix. These indicate into which classification the stations should be placed according to whether they are, respectfully, onshore stations, stations greater than two miles inland from the shore but within the Drainage Basin, within a few miles of the Drainage Basin boundary but geographically outside, or completely outside the Basin.

The parenthetical suffixes following the station listing indicate the type of observational facility,  $\underline{A}$  for airport,  $\underline{R}$  for radio range, etc. The notation  $\underline{A}$  under the Active 1958 column heading indicates the station so marked was in operation at the time the index was compiled.

Explanatory prefaces to each of the sections of the Index are included as prepared by the Climatological Section of the Canadian Meteorological Division. Grateful acknowledgment is herewith tendered to that office for its cooperation and assistance.

# Index of Wind Reporting Stations in the Province of Ontario

- 1. Stations: This index contains a list of all the stations in the Province of Ontario which have reported autographic wind data since January 1922. Since January 1955, stations without autographic wind equipment, but which record hourly observations of wind as part of the aviation weather reports, have been included. Most of the stations will have fairly continuous homogeneous records over the period of years involved, but at some the position of the anemometer may have been changed one or more times. For practical purposes, we have considered each station record as homogeneous.
- 2. <u>Location</u>: Precise location of each station is given in the January issues of the Monthly Record. In the list that follows, the county in which each observation station is located has been listed. Where stations have had different names, or where the period of record does not extend over the whole year, such facts are noted at the right hand side of the index.
- 3. Period of Record: The first month where data are available in the Meteorological Headquarters abstracts is shown as the date on which the station was opened. Similarly, the last month of record from the abstract is shown as the closed date. Stations in operation in July 1958 have been so marked in the proper column. When a station has appreciable break in the records, this fact has been noted.
- 4. <u>Data:</u> Percentage frequencies of wind direction and mean wind speed are shown for most of these stations in Climatic Summaries Volume II. From 1922 to 1954 the data have been abstracted from anemograms obtained from anemometers of the Robinson cup type. At the beginning of the period the four-cup anemometer was used, but during the early 1930's these were replaced by the three-cup anemometer. The anemograms record the number of miles of wind in each hour along with prevailing direction. Since January 1955, at those stations where hourly observations of the wind speed and direction are taken and recorded, these data have been processed instead of anemogram data. For practical purposes, data from the two sources should be considered as being the

same. At each observing station the anemometer is placed in the most representative location possible and an attempt is made to place the anemometer head thirty feet above the surface of the ground. A more complete discussion of wind data is to be found in the wind text of Climatic Summaries Volume II, Canadian Meteorological Division.

### WIND RECORDS

Station	County or District	Open	Closed	Active 1958	Notes
Agincourt	York	Jan 1922 Jan 1950	Dec 1945	A	DB
Armstrong (A)	Thunder Bay	Aug 1938		A	Wagaming; DB
Camp Borden (A) Caribou Island Centralia (A) Chalk River	Simcoe Thunder Bay Huron Renfrew	Jan 1940 Apr 1942 Aug 1950 Sept 1931	Oct 1945	A A A	DB Summer station; OS DB DB
Clear Creek (R) Cobourg Cochrane	Norfolk Northumberland Cochrane	Jan 1955 Jan 1926 Jan 1924	Apr 1950 Dec 1938	A	OS OS Out
Earlton (A)	Timiskaming	Oct 1938		Α	DB
Fergus Fort William (A) Fullarton	Wellington Thunder Bay Perth	Mar 1955 Sept 1941 Jan 1958		A A A	DB Lakehead Airport; OS DB
Gore Bay (A) Graham (A) Guelph	Manitoulin Thunder Bay Wellington	Aug 1948 June 1951 Jan 1922		A A A	OS DB DB
Hamilton (Marine) Hamilton (R.B.G.)	Timiskaming Wentworth Wentworth	Nov 1931 Nov 1953 July 1951	Dec 1952	A A	Out OS OS
Kapuskasing (A) Kenora (A) Killaloe (A) Kingston	Cochrane Kenora Renfrew Frontenac	June 1938 Feb 1923 Sept 1938 Jan 1922	June 1942	A A A	Out Out DB OS
Lansdowne House London (A) London (Lambeth) Long Point	Patricia Middlesex Middlesex Norfolk	Jan 1957 Aug 1940 Mar 1931 Apr 1922	<b>July 194</b> 0 Dec 1954	A A	Out DB DB Summer station; OS
Main Duck Island Maitland Malton (A) Moosonee	Prince Edward Grenville York Cochrane	May 1944 Dec 1952 Nov 1937 Jan 1938	Nov 1954 June 1953 Mar 1939	A	Summer station; OS OS Toronto Malton Airport; DB
Muskoka (A)	Muskoka	Feb 1943 Aug 1938		A A	Out DB
Nakina (A) North Bay (A)	Thunder Bay Nipissing	May 1939 Jan 1939		A A	DB DB
Oak Ridges Ottawa (A) Ottawa (Exp. Farm) Ottawa (N.R.C.)	York Carleton Carleton Carleton	Jan 1922 Nov 1939 May 1934 Dec 1951	Sept 1941 Dec 1940	A A	Aurora; DB Ottawa Uplands Airport; DB* Out Out
Pagwa (A)	Cochrane	Nov 1938		Α	DB*

Station	County or District	Open	Close Active	<u>No tes</u>
Parry Sound	Parry Sound	Jan 1922	Dec 1949	os
Pickle Lake	Patricia	Nov 1955	A	Out
Porquis Junction (A)	Cochrane	Jan 1939	Mar 1955 A	Out
Port Arthur	Thunder Bay	Jan 1922	July 1941	os
Rockcliffe (A)	Carleton	Aug 1950	A	Ottawa Rockcliffe Airport; DB*
St. Catharines				
(P. Lab.)	Lincoln	July 1952	A	DB
Sarnia (R)	Lambton	Sept 1948	June 1951	OS
Sioux Lookout (A)	Kenora	Jan 1936	June 1950	Out
		Jan 1955		
Southampton	Bruce	Jan 1922	Dec 1945	
		Nov 1951	Nov 1952	
		Dec 1954	A	Broken from 1955 on; OS
South Bay Mouth	Manitoulin	July 1954	A	OS
Stirling (R)	Hastings	Mar 1940	A	DB
Sudbury (A)	S <b>u</b> dbu <b>ry</b>	Jan 1954	A	DB
Sudbury	Sudbury	Oct 1947	Jan 1955	DB
Timmins (A)	Cochrane	Apr 1955	A	Out
Toronto	York	Jan 1922	A	OS
Toronto (Downsview)				
(A)	York	Oct 1956	A	DB
Trenton (A)	Hastings	Apr 1941	Dec 1941	
		Jan 1947	A	OS
Trout Lake	Patricia	July 1953	A	Out
Vinel and	Linco1n	Apr 1932	Feb 1958	DB
White River	A1goma	Jan 1922	A	DB
Wiarton (A)	Bruce	Jan 1955	A	OS
Windsor (A)	E <b>s</b> sex	Sept 1940	A	DB

# Index of Bright Sunshine Reporting Stations in the Province of Ontario

- 1. Stations: This index is a list of all the stations in the Province of Ontario which have reported bright sunshine data since 1881. While there have been relocations of some of the stations, for practical purposes, all the data for each station should be considered as homogeneous.
- 2. Location: The precise location of each station in this index is shown in the January issue of the Monthly Record during many of the years of record for each station. Alternate station names and whether or not the record is complete for the year as a whole is shown on the right hand side of the index.
- 3. Period of Record: The first month where data are available in Meteorological Headquarters abstracts is shown as the date on which the station opened. Similarly, the last month of record in the abstract is shown as the closed date. Where stations were in operation in July 1958 the symbol A has been shown in the proper column.
- 4. <u>Bright Sunshine Data</u>: In Canada, bright sunshine is recorded on a Campbell-Stokes recorder. By means of a glass sphere, sunshine is focused to produce a burn on a narrow sunshine chart from which the observer is able to scale off the number of hours a day on which a bright sun was shining. These daily totals, which are scaled off to a tenth of an hour, are added to give the monthly total of bright sunshine in hours. The recorder, which is usually placed on a stand, is mounted free from all obstructions from horizon to horizon so that no shadows will fall across

the recorder in any season. Attention should be given to the fact that the Canadian bright sunshine values differ from the U.S.W.B. values of visible sunshine. Visible sunshine values are usually considerably higher than bright sunshine values since the sunshine will not register on a Campbell-Stokes recorder when there is a thin layer of high cloud or in the intervals about one half an hour after sunrise and before sunset.

### SUNSHINE RECORDS

Station	County or District	Open	Close	Active 1958	Notes
Armstrong (A)	Thunder Bay	Aug 1938		A	Wagaming; DB
Barrie	Simcoe	Dec 1882 Sept 1905	Aug 1903 Dec 1931		DB
Belleville (Par. Lab.) Brampton	Hastings Peel	Sept 1929 July 1950	Apr 1953	A	OS DB
Caribou Island Chalk River	Thunder Bay Renfrew	May 1944 Sept 1931		A A	Summer station; OS  DB
Chatham Combermere Cornwall	Kent Renfrew Stormont	Oct 1933 Feb 1957 Sept 1882	Dec 1887	A A	DB Out Out
Cornwall (O. Hydro.)	Stormont	Mar 1957		A	Out
Delhi Durham	Norfolk Grey	Nov 1934 Oct 1897	July 1901	A	DB DB
Fullarton	Perth	Nov 1957		A	DB
Gravenhurst	Muskoka	May 1902 Feb 1915	Nov 1908 May 1922		DB
Guelph	Wellington	Oct 1914		A	DB
Haileybury Harrow Hearst	Timiskaming Essex Cochrane	June 1906 May 1918 Jan 1931	Aug 1922 Mar 1931	Α	Out DB Out
Kapuskasing Kingston Kingsville Kohler	Cochrane Frontenac Essex Haldimand	May 1918 Oct 1882 Oct 1890 June 1949	Sept 1892	A A	Experimental Farm; Out OS OS DB
Lindsay London (Lambeth) London (A)	Victoria Middlesex Middlesex	Aug 1882 Nov 1935 Aug 1942	J <b>uly</b> 1941	A A	DB DB DB
Maitland Moosonee	Grenville Cochrane	June 1953 Oct 1932	Apr 1954	A	OS Out
New Liskeard	Timiskaming	Jan 1924 May 1935 July 1943	Apr 1933 Feb 1937	A	Out
Oak Ridges Ottawa (City) Ottawa (Exp. Farm)	York Carleton Carleton	Mar 1920 Jan 1916 Jan 1898	Nov 1957 Dec 1919	A	Aurora; DB DB* DB*
Pembroke	Renfrew	May 1883	May 1888		Out
St. Catharines St. Catharines (P. Lab.)	Lincoln Lincoln	Aug 1882 Nov 1928	Dec 1884	A	DB DB

Station	County or District	Open	Close	Active 1958	Notes
Stratford	Perth	Sept 1882	June 1888		DB
Sudbury	Sudbury	Nov 1944	Dec 1946		DB
Toronto	York	Aug 1881		A	os
Turbine	Sudbury	Jan 1921		A	High Falls; DB
Vineland	Lincoln	Feb 1915		A	DB
Walker's Point	Muskoka	Nov 1928	Nov 1934		DB
Windsor	Essex	Sept 1882	Dec 1887		os
Woodstock	Oxford	Nov 1881		A	DB

# Index of Temperature and Precipitation Reporting Stations in the Province of Ontario

- 1. Stations: This index contains the names of all the stations in the Province of Ontario which have reported temperature and precipitation data for a period of six months or longer. Where two or more names have been used for a station, the other names are shown in the remarks column. In most cases the most recent official station name is used, but in some instances where there is more than one station at a city or town, a differentiation is made in the station name to point out the different sites of the observation stations. However, usually no indication is given whether or not the station location has been changed over the period of record. While some stations will have continuous homogeneous records over a long period of years, other stations have been moved frequently with the result that the data may not be strictly homogeneous.
- 2. County: Location of each station listed is restricted to the name of the county or district in which the station lies. Complete location information in the form of latitude and longitude coordinates and heights above sea level are given in the January issues of the Monthly Record. These indexes are available from 1916 to 1955 except for the even numbered years during the decade of the 1940's. For stations in operation prior to 1916 an index with coordinates is shown in each issue of the Annual Report of the Meteorological Service of Canada.
- 3. <u>Period of Record</u>: The first month where data are available in the Meteorological Headquarters abstracts is shown as the date on which the station opened. Similarly, the last month of record in the abstract is shown as the closed date. Where stations are in operation in July 1958, the symbol A has been shown in the proper column. Breaks in the record of less than six months have not been indicated. However, where there are breaks of more than six months but less than a year, this fact has been entered in the remarks column. When the break is more than a year, the period of record is shown in two segments.
- 4. <u>Temperature</u>: The temperature data referred to have been obtained from temperature observations read from official thermometers in standard shelters. These shelters protect thermometers against radiation and weather and during the early part of the period were located on a north wall. However, for the past several decades at each station the thermometers have been housed in a Stevenson screen over a relatively level grassy surface with the bulbs of the thermometers about four feet above the surface of the ground.
- 5. Precipitation: Precipitation data consists of rainfall data taken from official raingauge observations and snowfall data which are observed as the snow lies on the ground. The top of the raingauge is usually located one foot above a level grassy surface. In reducing snowfall data to the water equivalent, a ten to one arbitrary relationship is assumed, that is, the equivalent of ten inches of snow is taken to be one inch of water.
- 6. Classification of Station: All stations should be considered as having both temperature extremes and precipitation data except those marked with a capital P in the proper column. Sometimes a station started as a "precipitation only" station and then at a later date became a temperature reporting station. This fact is noted in the remarks column. Further information on "summer only" stations and other notes of value to the user of the data will be found in this column. For explanation of the symbols OS, DB, DB\*, and Out, see the introductory remarks on page 160.

## TEMPERATURE AND PRECIPITATION RECORDS

	County or			Active	Pcpn	
Station	District	Open	Close	1958	only	Notes
Abitibi Canyon	Cochrane	Jan 1931		A		Out
Agincourt	York Thurder Per	Jan 1896 June 1950		A A		DB
Aguasabon Ailsa Craig	Thunder Bay Middlesex	Jan 1871	June 1873	А		Out
Alisa Claig	WIGGIESEX	Jan 1883	Apr 1888			DB
Albany	Patricia	June 1934	May 1939			Broken record; Out
Albion	Pee1	Apr 1956	May 1939	А	P	DB DB
Aldershot	Halton	Feb 1947		A	P	DB
Aldershot (O. Hydro,)		Apr 1951		A	_	Burlington T.S.; DB
Alexandria	Glengarry	July 1888	Dec 1893			Out
Algonquin Park	Nipissing	July 1917		Α		DB
Alliston	Simcoe	Mar 1953		Α	P	DB
A110a	Pee1	Nov 1950	Nov 1954			Broken record; DB
Almonte	Lanark	Feb 1912	Apr 1922			
		Sept 1948	Nov 1949			Out
Alton	Pee1	Jan 1887		Α		Data doubtful since 1936; DB
Amherstburg	Essex	June 1883	July 1884		P	OS
Angus	Simcoe	Jan 1930		Α		DB
Apple Hill	Glengarry	Nov 1950		A		Out
Apsley	Peterborough	Mar 1922	Dec 1940			
	_	Dec 1944	Mar 1957			Broken record; DB
Arden	Frontenac	Jan 1895	Jan 1911			DB
Armstrong (A)	Thunder Bay	Aug 1938		Α	P	Wagaming; DB
Armstrong	Thunder Bay	May 1926	Oct 1947			Summer station 1939-1947; DB
Atikokan	Rainy River	Feb 1916	Oct 1916			,
	*	Feb 1918		Α		DB
Augusta	Grenville	Jan 1883	July 1883		P	DB
Aurora	York	May 1884	Apr 1919			DB
Axe Lake	Parry Sound	Feb 1885	Dec 1898		P	Broken record (Spence); DB
Aylmer	Elgin	Sept 1883	May 1888			
		May 1948	June 1956			
		June 1957		A	P	Out
Aylmer (2)	Elgin	June 1958		A		Out
Ayr	Waterloo	Apr 1956		A		DB
Bala	Muskoka	July 1883	Dec 1907			Whiteside; DB
Bancroft	Hastings	Jan 1884	Mar 1886			
	0	Oct 1889	Dec 1900			
		Jan 1905	Sept 1945			
		Dec 1946	Dec 1947			
		Apr 1949	Dec 1955			DB*
Barclay	Kenora	Apr 1887	Dec 1890		P	
		Apr 1894	Nov 1896			DB
Bark Lake Dam	Renfrew	Jan 1950		A		DB*
Barrett Chute	Renfrew	May 1950		Α	P	Out
Barrie	Simcoe	Mar 1866	Dec 1901			Broken record
		Jan 1907	Dec 1921			
		Sept 1923	Feb 1924			
		Jan 1927	July 1936	Α.		DD
Rose Teland	Niniccina	June 1950	Ian 1017	A		DB Beards -
Bear Island	Nipissing	May 1916 Aug 1918	Jan 1917 July 1949			Broken record; DB
		June 1950	July 1949	A		Bloken lecold; DB
Beatrice	Muskoka	Mar 1876		A		Rosehill; DB
~ · · · · · · · · · · · · · · · · · · ·	PARTEURG	MAL LOTO		Zh.		moderata, DD

Station	County or District	Ор	en	Clo	se	Active 1958	Pcpn only	Notes
Beaverten	Ontario	Mar	1948	June	1949			
			1951	9		Α		Broken record; DB
Beeton	Simcoe	No $\mathbf{v}$	1916			Α		DB
Beggsboro	Parry Sound	June	1884	Feb	1901			Sprucedale; DB
Bell Rock	Frontenac		1957			Α	P	to T and P; DB
Belleville	Hastings	-	1866	-	1878			
		May	1883	_	1890			
		Jan	1892	Apr	1904	Α.		25
Belleville (Par. Lab.)	Hastings	Jan Aug	1921 1929			A A		OS OS
Benny	Sudbury	Nov	1948	Oct	1956		P	Espanola; DB
Big Chaudiere Falls	Parry Sound	May	1918	Nov	1919			
		Jan	1921	Dec	1930		P	DB
Big Chute	Muskoka	May	1913	May	1916			
(Buckskin)		May	1920	Feb	1924			Broken record
		Dec	1956			A	P	DB
Bingham Chute	Parry Sound	Feb	1933			Α		DB
Birnam	Lambton	Oct	1882	Mar	1915			Arkona broken; DB
Biscotasing	Sudbury	Oct	1887	Apr	1889			
		June			1891			
		Jan	1895		1896			
		Jan	1900	Dec	1900			
D1 1 C1	mi i n	Dec	1926		1054	A		DB
Black Sturgeon Lake	Thunder Bay	May	1951	Aug	1954	Α.		Summer station; DB
Black Sturgeon River Blenheim	•	Oct	1957	D	1007	Α	P	DB DB
	Kent	Apr	1883	Dec	1897 1940		P	DB
Blind River	A1 goma	Apr July	1926	Dec Oct	1940			Broken record; OS
Bloomfield	Prince Edward	Apr	1896		1903			Bloken lecold, 05
DIOUNG TELG	Timee Luwalu	Feb	1906	Dec	1933			os
Bobcaygen	Victoria	May	1883		1897		P	DB
Bognor	Grey	May	1883		1900		-	Bond Head; DB
Bowmanville	Durham	Aug	1947	Dec	1957			os
Bow Park (Brantford)		Oct	1912	Dec	1913			DB
Bracebridge	Muskoka	Sept	1882	Mar	1886		P	DB
Bradford	Simcoe	Sept	1951	June	1957		P	in 1957; DB
Bradford (2)	Simcoe	Aug	1954			Α		DB
Brampton	Pee1	Jan	1871	Dec	1888			DB
		May	1948			Α		DB
Brantford	Brant	Jan	1876	May	1878			
		$\mathtt{Apr}$	1881	Aug	1915			
		Jan	1917	Dec				
		-	1922	May				
		Jan	1931	Jan	1957			Broken record
		Mar	1958		4000	Α	-	DB
Brechin	Simcoe	Jan	1883	Oct	1883		P	DB
Brighton	Northumberland	May	1948	Aug	1950			OS
Brockville	Leed <b>s</b>	Nov	1871	-	1879			
		Jan	1889	Apr	1890	A		DB
Broddytown	Pee1		1915 1951	Aug	1956	A		DB
Brucefield	Huron	Apr	1903	Aug	1930	Α		Clinton; DB
Bruce Mines	Algoma		1898	Dec	1914	**		OS
Brule Lake	Nipissing		1926	Aug	1933		P	DB
Buda	Thunder Bay		1887	_	1887		-	
		_	1890	Dec	1892			DB
Burleigh	Peterborough	-	1883	Nov	1887		P	DB
Burlington	Halton	Apr	1947	May	1950			
		Mar	1951			Α		OS

Station	County or District	<u>o</u>	pen	<u>C1</u>	o <b>s</b> e	Active 1958	Pcpn only	Notes
Burnamthorpe	Pee1	May	1951	Mar	1955		P	DB
Calabogie	Renfrew	Jan	1950	Mar	1956		P	Out
Caledonia	Haldimand	Jan	1931			Α		DB
Calvin	Nipissing	Apr	1895	Dec	1922			Out
Cameron Falls	Thunder Bay	-	1924			Α		Broken record; DB
Campbellcroft	Durham		1948	Sept	1950		P	Summer station; DB
Campbellford	Northumberland	- ,	1915			Α	_	DB
Campbellford (2)	Northumberland		1929	Nov	1937		P	Healey Falls; DB
Camp Borden (A)	Simcoe	-	1926	Feb	1928			
<b>a</b> 1	77 - 9 - 1 * 1	-	1934	Oct	1945			DB
Canboro	Haldimand		1946	NT	1005	A		DB
Cannington	Ontario	May	1883	Nov	1885		D	D.D.
Carra 1	Cardbarana	Jan Mar	1889 1916		1890 1920		P P	DB DB
Capreol Caramat	Sudbury	May	1916	Dec	1920		P	DB DB
Caribou Island	Thunder Bay Thunder Bay	May	1949	Aug	1937	Α		Summer station; OS
Caribou Lake	Thunder Bay	Aug	1930	Sont	1936	n	P	Summer station; DB
Carleton Place	Lanark	Aug	1948	осре	1,30	Α	P	Out
Cartier	Sudbury	Jan	1887	Tu1v	1901	11	1	Broken record
Cartici	Cudbury	Oct	1945		1948			DB
Cayuga	Haldimand	Apr	1885	_	1887		P	Broken record
ouy ag a	110202	Apr	1889	_	1890		-	DIOREM ICCOIG
		Jan	1892		1903			DB
Centralia (A)	Huron	Oct	1942	,		A		DB
Central Patricia	Patricia	Aug	1953			A		Out
Chalk River	Renfrew	Sept	1931			A		DB
Chapleau	Sudbury	Aug	1889	Feb	1891			
		Ju1y	1913			Α		DB
Charlinch	Muskoka	Aug	1883	Dec	1892			Hoodstown; DB
Chatham	Kent	Apr	1883	Sept	1946			DB
Chatham (CFC)	Kent	Oct	1946			A		DB
Chats Falls	Carleton	-	1950			A		Out
Chatsworth	Grey	Dec	1952	0 1	1051	Α		DB
Cheltenham	Pee1	Oct	1950	Oct	1951	Α.	P	DB
Chenaux	Renfrew	May	1950			A	D	Out
City View Clarkson	Carleton	Oct	1953			A	P	Out
Clear Creek (R)	Pee1 Norfolk	Nov	1949 1942			A A		DB OS
Clifford	Wellington	May	1942			A	P	DB
Clinton	Huron	Aug Mar	1956			A	Ţ	DB
Clontarf	Renfrew		1882			A		Out
Cobourg	Northumberland		1925	Dec	1932	п		Broken record
Cobourg	NOT CHAMDELL MIG		1948	No v	1951			Dioken record
		Apr	1956	110	2/0-	Α		OS
Cochrane	Cochrane	-	1910			A		Out
Cochrane (For.)	Cochrane	-	1926	Dec	1932			Out
Cockburn Island	Manitoulin	Oct	1897	Feb	1910			os
Coe Hill	Hastings	Apr	1948	Sept	1957		P	to T and P; DB
Colborne	Northumberland	Jan	1883	Mar	1886			Carlow
		June	1924	Mar	1925			OS
Coldstream	Simcoe	July	1888	Aug	1899		P	DB
Coldwater	Simcoe		1883	Jan	1923			
0.111		Dec	1925		* 0==	A		Broken record; DB
Collingwood	Simcoe	No v	1869	Jan	1873			
		Jan	1892	Oct	1906			
		Aug	1910	Apr	1917			1025 obs
		Jan	1920	Dec	1926	A	n	1925 obs. no good
		Jan	1935			A	P	DB

	County or			Active	Pcpn	
Station	District	Open	Close	1958	only	Notes
Collingwood						
(Blue Mtns.)	Simcoe	Jan 1896	May 1901			DB
Combermere	Renfrew	Jan 1956	May 1957			Out
Conistogo	Waterloo	June 1880	Dec 1890			
		Jan 1894	Oct 1898			DB
Coniston	Sudbury	Apr 1921		Α	_	DB
Copetown	Wentworth	June 1882	Sept 1892		P	Nelson; DB
Copper Cliff	Sudbury	Nov 1906	Oct 1914		ъ	DB
Cornwall	Stormont	Jan 1867	Dec 1887		P P	Ont
Cornwall (CKSF)	Stormont	Apr 1948 Nov 1950	May 1950	Α.	P	Out
Cornwall (O. Hydro.)		Nov 1950 Dec 1954		A A		Out Out
Cornwall	Stormont	Dec 1934		А		Out
(St. L.H.S.)	Stormont	Jan 1958		Α		Out
Cottam	Essex	June 1882	Feb 1922	••		DB
Couchiching Falls	Simcoe	July 1918	Oct 1923		P	DB
Credit	Pee1	Sept 1880	Oct 1890		P	Summer only; DB
Crewson Corners	Wellington	Oct 1957		Α	P	DB
Croydon	Lennox & Add.	Jan 1895	July 1908		P	DB
Crystal Falls	Nipissing	May 1922		A		Formerly called
						Smoky Falls; DB
Dacre	Renfrew	June 1926	Aug 1936			Summer station; Out
Dale	Durham	June 1957	Aug 1930	Α		Summer station; DB
Dalhousie Lake	Lanark	Sept 1923		A	P	High Falls; DB*
Dalhousie Mills	Glengarry	Apr 1899	Dec 1901	**	•	Out
Dealtown	Kent	Apr 1883	Sept 1904		P	DB
De Cewsville	Haldimand	Feb 1889	Dec 1890			
		Jan 1892	Dec 1897			DB
Delaware	Middlesex	Jan 1883	Oct 1886		P	DB
Delhi	Norfolk	June 1934		A		DB
Denbigh	Lennox & Add.	June 1883	Dec <b>1</b> 896		P	Out
Des Joachims	Renfrew	May 1950		Α	P	Out
Desoronto	Hastings	June 1882	Sept 1905			os
Dog Lake	Thunder Bay	July 1950		Α		DB
Dog Lake Dam	Thunder Bay	July 1923	Nov 1930		P	Kaminstikwia; DB
Dog River	Thunder Bay	Sept 1957		Α		DB
Dome	Cochrane	Mar 1911	June 1915			South Porcupine; Out
Domville	Grenville	Feb 1948	Aug 1954		P	DB
Dona	Thunder Bay	Oct 1926	De- 1052	Α	P P	DB
Doon Dorset	Waterloo Mus koka	May 1948 Aug 1949	Dec 1953 Oct 1954		r	DB DB
Drayton	Wellington	Aug 1949 May 1883	Aug 1889		P	DB
Dresden	Kent	July 1956	Aug 1009	Α	r	DB
Dryden	Kenora	Feb 1914		A		Out
Dunbarton	Ontario	Nov 1956		A	P	Summer station; OS
Dundas	Wentworth	Apr 1870	Feb 1874			DB
Dunnville	Haldimand	Jan 1900	Dec 1902			Pcpn only to 1957
		Oct 1953		Α		DB
Dunnville (A)	Haldimand	May 1941	Oct 1944			DB
Dunnville (2)	Haldimand	July 1956	May 1957			DB
Dunvegan	Glengarry	Oct 1947	Aug 1949			Out
Durham	Grey	June 1882	July 1901			
		Sept 1927	Dec 1928			
		Sept 1935	Jan 1937			D4
Dutton	Plain	Nov 1947	Te. 1 1030	Α		Edgehill; DB
Dutton	E1gin	Mar 1913	July 1922			DB
Dutton (Cowal)	Elgin	Jan 1926 Apr 1883	Feb 1928 Dec 1914		P	Broken record; DB
Dyment (Cowal)	Kenora	Apr 1883 Dec 1925	Oct 1914		P	Out
2 June 11 b	ALCAIO L G	DEC 1763	000 1921			Out

						169
	County or	0	01	Active	Pcpn	N. A
Station	District	Open	Close	1958	only	Notes
Ear Falls	Patricia	Oct 1928	Aug 1939			
		Jan 1950	· ·	Α		Out
Earlton (A)	Timiskaming	Sept 1938		Α		DB
Edwardsburg	Grenville	June 1882	Dec 1887		P	DB
Egmondsville	Huron	July 1882	Dec 1887		P	DB
Egremont	Grey	Mar 1880	Dec 1893			DB
Elk Lake	Timiskaming	July 1926	Oct 1927		P	Out
Elmira	Waterloo	May 1955		Α		Summer station; DB
Elmvale	Simcoe	May 1947	Jan 1952		Pс	Pcpn only to 1951;
						DB
Elora	Wellington	Jan 1882	Apr 1895			
		Apr 1909	Jan 1923			DB
E1sas	Algoma	Dec 1924	Oct 1930			Out
Ето	Rainy River	Apr 1922		A		Out
Emo (2)	Rainy River	May 1957		Α		Pcpn only to 1958;
						Out
Emsdale	Parry Sound	Jan 1895	June 1924			
		June 1934	Sept 1952		P	DB
Englehart	Timiskaming	May 1948		Α		Out
Ennismore	Peterborough	May 1882	Jan 1910		P	DB
Erasmus	Dufferin	Jan 1896	Dec 1903			DB
Espanola	Sudbury	Mar 1920	July 1930			Broken record; DB
Eugenia	Grey	May 1916		Α	P	DB
Fenelon Falls	Victoria	July 1915	Aug 1917		P	
		Jan 1921		A		DB
Fergus	Wellington	Jan 1883	June 1894		P	
		Oct 1939		Α		DB
Fitzrey Harbour	Carleton	Apr 1870	Dec 1884			
		Jan 1886	Nov 1887			Out
Florence	Lambton	Feb 1883	May 1887			DB
Foleyet	Sudbury	Apr 1931		Α		DB
Fonthill	Welland	Nov 1945	Dec 1947			Ridgeville; DB
Forest	Lambton	Sept 1924		A		DB
Fort Frances	Rainy River	Jan 1892	Sept 1896			
		Sept 1912	Feb 1915			
		Oct 1916		A		Out
Fort Frances (For)	Rainy River	May 1943		Α		Summer station; Out
Fort Hope	Patricia	Jan 1879	June 1881			Martins Falls to
		Jan 1895	Dec 1909			1881
		Jan 1917	Aug 1923			Out
Fort William (A)	Thunder Bay	May 1924	June 1931			Broken record
		Aug 1941		Α		Fort William/Port
						Arthur, Lakehead
						Airport; OS
Franz	Algoma	July 1917	Apr 1951			
		Feb 1953		Α		DB
Franz (Forestry)	Algoma	May 1944	Aug 1952			Summer only, broken
						record; DB
Frederickhouse						
Lake Dam	Cochrane	Jan 1950		A		Out
Fournier	Prescott	May 1957		Α		Out
Foymount	Renfrew	Apr 1956		A	P	Out
Fullarton	Perth	Aug 1956		Α		DB
0.1.						
Gal t	Waterloo	Jan 1878	June 1898			
G 1 11		Apr 1948		Α		DB
Geraldten		* ***			-	77
(O. Hydro.)	Thunder Bay	June 1950		A	P	DB
Geraldton (For)	Thunder Bay	July 1948		A		(1948-51 summer sta-
						tion); DB

170						
C+-+:	County or	0===	01000	Active		N - 4
Station	District	Open	Close	1958	only	Notes
Georgetown	Halton	Jan 1885		Α		DB
Georgina (Sutton)	York	Oct 1869	Mar 1908			Broken record; DB
Gilmour	Hastings	June 1948	Feb 1955			220201 200014, 22
		Jan 1956	Sept 1957			Broken record; DB
Glastonbury	Lennox & Add.	Apr 1883	Nov 1885		P	Drough record, DD
orab tollour y	Delinox & reduct	Jan 1892	July 1894		•	
		Jan 1896	Dec 1897			DB
Glen Allen	Wellington	Aug 1955	Oct 1957		P	Summer station; DB
Glen Cairn	Simcoe	May 1883	Dec 1886		P	DB
Glencoe	Middlesex	Apr 1870	June 1873			DB
Office	MIGGICSCA	Oct 1882	Sept 1883		P	
		May 1948	ocpt 1003	A	^	DB
Glen Collin	Elgin	Mar 1958		A		DB
Gloucester	Carleton	June 1954	Dec 1954	**	P	Out
Goderich	Huron	Dec 1866	Dec 1887			out
Goderien	naton	Aug 1929	Jan 1951			OS
Goderich Lighthouse	Huron	Jan 1875	Dec 1887		P	03
Goderich Lighthouse	naron		Mar 1911		I	
		Jan 1906 Mar 1912	Dec 1914			OS
Codorich Township	Huron		Dec 1914	A		Goderich (Ridge -
Goderich Township	пштоп	Mar 1915		А		crest); OS
Gogama	Cardbares	Man 1024	Nov 1934		P	
0	Sudbury	May 1926	Nov 1934	Α.	r	Out
Goodham	Haliburton	June 1948	N 1026	A		Broken record; DB
Goose Island	Patricia	July 1930	Nov 1936			Summer station; Out
Gore Bay	Manitoulin	Oct 1915		A		OS OS
Gore Bay (A)	Manitoulin	July 1947		A		OS
Gores Landing	Northumberland	Aug 1943		A		DB
Graham (A)	Thunder Bay	Oct 1948	N 101m	A		DB
Grand Valley	Dufferin	Mar 1910	Nov 1917		P	
		May 1934	Nov 1939			DB
Granton	Middlesex	Jan 1873	Dec 1886			DB
Grasset	A1goma	Sept 1913	Dec 1914			Instruments moved
						to Franz; DB
Gravenhurst	Muskoka	Nov 1870	Apr 1916			
		Feb 1918	June 1921		_	
		Apr 1948	Sept 1949		P	DB
Green River	York	Apr 1953	Sept 1957		P	DB
Grey County Forest	Grey	June 1953	Nov 1953		P	Sept only in 1954;
						DB
Grimsby	Lincoln	June 1910	Dec 1917			
		Mar 1921	Sept 1929			
		May 1931	Mar 1932			
		Sept 1934	Mar 1935			
		Jan 1937	Nov 1939			
		Nov 1944		A		OS
Grimsby (Rock	Lincoln	Jan 1915	Dec 1928			
Chapel)		Jan 1931		Α		DB
Gue1ph	Wellington	May 1881	Dec <b>1</b> 894			
		Dec 1898		Α		DB
Hagersville (A)	Haldimand	Dec 1941	Aug 1945			Broken record; DB
Hagersville	Haldimand	Apr 1948		A	P	DB
Hagersville (2)	Haldimand	July 1956		A		DB
Haileybury	Timiskaming	Nov 1894	July 1922			
	-	May 1930	Dec 1952			Out
Haliburton	Haliburton	Apr 1883		A		DB
Haliburton (2)	Haliburton	May 1949	Dec 1955			DB
Hamilton	Wentworth	Mar 1866	Dec 1887			
		Jan 1898	May 1904			
		Jan 1911	Dec 1929			
		May 1938		A		OS

Station	County or District	<u>Op</u>	en	<u>C1</u>	o <b>s</b> e	Active 1958	Pcpn only	*.		
Hamilton (Gage Park)	Wentworth	Sept	1953	May	1956		P		os	
Hamilton (R.B.G.)	Wentworth	-	1950	,		Α			OS	
Hanlon	Pee1	Oct	1950	Nov	1951		P		DB	
Hanover Lake	Thunder Bay	May	1952	Sept	1955			Summer	station;	Out
Harrow	Essex	May	1917			A			DB	
Harrowsmith	Frontenac	June	1883	July	1889				DB	
Harwood	Northumber1 and	Ju1y			1954			Summer	station;	DB
Hastings	Northumberland	Apr		Nov	1885		P		DB	
Hawkesbury	Prescott	Sept		<u> </u>		Α	_		Out	
Hearst	Cochrane	July			1934		P	Summer	station	
77 A T - 1	Pee1	Oct Tune	1951	may	1952				Out	
Heart Lake	Timiskaming	0	1928			A A			DB	
Heaslip Heeley Falls	Northumberland		1921	Dec	1930	А			Out	
neeley Falls	NOTUMELIANG	-	1931	Nov	1937				DB	
Heeley Falls (2)	Northumberland	_	1931	140 4	1940				DB	
Helen Mine	A1goma	~	1940		2710	Α			DB	
Heren Bay	Thunder Bay		1886	Tune	1891				2.0	
,			1893	Feb	1902					
		July	1913	No v	1920			Broken	record	
		Aug	1953	Ju1y	1954			Summer	station;	os
Hespeler	Waterloo	June	1946	June	1947			Summer	station;	DB
Hillier	Prince Edward	July		Jan	1920				OS	
Hillsport	Thunder Bay	July	1929	May	1931					
		June	1951	Aug	1952		P	Summer	station;	Out
Holland Marsh	York	0	1946	Feb	1948				DB	
Holstein	Grey		1953	Apr	1956					
	7	_	1957			A			DB	
Hopeville	Grey		1947			A	P		DB	
Hornby	Halton	June				A	P	D 1	DB	DD
Hornpayne Hound Chute	Algoma	June				A A			record;	
Houng Cimte	Timiskaming	May	1930			A		гсри о	nly to 19 Out	30;
Humber	York	May	1888	May	1890		P		DB	
Hunta	Cochrane	,	1950	racy	1070	Α	-		Out	
Huntsville	Muskoka		1892	Dec	1904					
		•	1906	Aug	1908					
		July	1923	Ü		Α		Broken	record;	DB
		,								
Ignace	Kenora	Ju1y	1889	June	1891					
		Jan	1914						Out	
Ilderton	Middlesex	June	1951	Aug	1956			Pcpn o	nly to 19 DB	53;
Indian Bay	Kenora	Mar	1914			Α		Sho al	Lake; Out	
Indian Chute	Timiskaming	Jan	1912	Dec	1912			E <b>1k</b> La	ke	
	_		1950			A			Out	
Ingerso11	Oxford		1870	Dec	1876					
		July		Nov	1888			_		
T 16	Tr		1956		1957		P	Summer	only; DB	
Ingolf	Kenora		1927	sept	1941	Λ			Out Out	
Iroquois Falls Island Falls	Cochrane Cochrane	-	1913 1955			A A			Out	
						A				
Jackson Manion	Patricia	Sept		July	1929				Out	
Jarvis (A)	Haldimand	Sept		Apr	1942			USWB F	orm 1135;	DB
Jarvis	Haldimand	May		May	1956				DB	W- 100
Jarvis Lake Tower	Thunder Bay	0	1952	Aug	1956			Summer	station;	DB
Jermyn	Peterborough	_	1895	Aug	1905		70		DB	
Joly Judes	Parry Sound		1885	July			P		DB	
Judge	Timiskaming	Dec	1907	Apr	1909				Out	

Station	County or District	Open	Close	Active Pcpn 1958 only	
Kagawong	Manitoulin	Jan 1951		Α	os
Kakabeka Falls	Thunder Bay	Nov 1908		A	DB
Kapuskasing (A)	Cochrane	Feb 1938		A	Out
Kapuskasing	Cochrane	Jan 1918		Α	Experimental Farm;
					Out
Kapuskasing (2)	Cochrane	June 1934	Nov 1934		Out
Kashbowie	Thunder Bay	Sept 1956	Feb 1958		DB
Katrine	Parry Sound	Apr 1949	Oct 1949		DB
Kawene	Rainy River	Sept 1935	Jan 1951		DB
Kemptville	Grenville	Nov 1928	Feb 1937	Α.	22
	T1 1 . D	May 1939		A	DB
Kenegami Dam	Thunder Bay	June 1950		A P	DB
Kenora (A)	Kenora	Aug 1938	M 1020	A	Out
Кепога	Kenora	Sept 1899	Mar 1939		Rat Portage; Out
Killala Lake	Thunder Bay	May 1945	July 1948		Summan station. DD
V:110100 (A)	Renfrew	Aug 1952	Sept 1954	Α	Summer station; DB
Killaloe (A) Kincardine	Bruce	Sept 1938 May 1870	Dec 1882	A	DB
Kincardine	ыцсе	*	Dec 1882 Dec 1891		
		•	June 1898	P	OS
Vinceton (A)	Frontenac	Jan 1894 Oct 1930	Mar 1932	r	03
Kingston (A)	riontenac	Aug 1943	Sept 1945		os
Kingston		Aug 1943	3ept 1943		03
(Barriefield)	Frontenac	Apr 1939	July 1943		os
Kingston (Alcan)	Frontenac	Feb 1947	Nov 1949		OS
Kingston (Frontenac)		Oct 1945	NOV 1949	Α	OS
Kingston (Queens U)	Frontenac	Jan 1874	Apr 1939	11	00
Kingston (Queens 0)	TIOMCCHAC	Nov 1945	Dec 1946		
		Oct 1951	Mar 1957		os
Kingsville	Essex	Jan 1890	Sept 1892		
	20001	Jan 1898	Dec 1904		
		Jan 1908	Sept 1919	P	os
Kinmount	Victoria	Dec 1921	Apr 1926	_	
		Oct 1948	June 1950		DB
Kirkfield	Victoria	Apr 1883	Dec 1883		DB
Kirkland Lake	Timiskaming	Nov 1915	June 1916		
	Ŭ	Apr 1941	Feb 1942		
		Feb 1950		Α	Out
Kirkton	Huron	Sept 1883	Dec 1886	P	DB
Kitchener	Waterloo	Oct 1914		A	Berlin; DB
Kohler	Haldimand	May 1949			DB
La Cave	Nipissing	May 1950		A	Out
Lac Seul	Patricia	Sept 1914	Apr 1934	P	Out
Lafontaine	Simcoe	Sept 1947	Jan 1950		
		July 1953	0	Α	DB
Lakefield	Peterborough	Sept 1874	Nov 1875		
		Oct 1876	Feb 1949		DB
Lakeport	Northumberland	Apr 1952		A	DB
Lake St. Joseph	Patricia	July 1930	Dec 1930	P	Out
Lamable	Hastings	Apr 1883	July 1887	P	Hastings; Out
Lansdowne	Leeds	June 1895	Jan 1910	P	DB
Lansdowne House	Patricia	Mar 1941		A	Out
Leamington	Essex	Mar 1916		A	os
Lindsay	Victoria	Jan 1880		Α	DB
Lions Head	Bruce	Oct 1883	Dec 1896	P	OS

Station	County or District	Open	Close	Active 1958	Pcpn only	Notes
Listowel	Perth	May 1880	Apr 1889			
220 to nex		May 1899	July 1904			
		Jan 1906	Dec 1906			
		Nov 1912	Dec 1916			
		Jan 1918	Dec 1918			
		Mar 1921	Sept 1923			
		Nov 1924	Mar 1925			
		Sept 1950	Mar 1955			77
Tithin Commont	Wanidawiin	Jan 1957	Dan 1001	Α		DB
Little Current	Manitoulin	Aug 1871 Aug 1886	Dec 1881 Oct 1890			Broken record
		Aug 1886 July 1892	Dec 1892			os
Little Forks	Rainy River	Nov 1890	May 1893			Out
Lodi	Stormont	July 1882	May 1883		P	Out
London	Middlesex	Dec 1871	Apr 1874		_	3.23
		Oct 1878	Dec 1879			
		Jan 1881	Jan 1887			DB
London (2)	Middlesex	Mar 1883	July 1890			DB
Lenden (South)	Middlesex	Sept 1890	Jan 1932			DB
London (Lambeth)	Middlesex	May 1932	Mar 1941			Old London Airport; DB
London (A)	Middlesex	July 1940		Α		Crumlin Airport: DB
London (Roehampton)	Middlesex	July 1956	Sept 1957		P	DB
London (Sharon Dr.)	Middlesex	Sept 1956		Α	P	DB
Long Branch	York	Jan 1951	Dec 1951		P	os
Long Lac	Thunder Bay	Mar 1921	Oct 1957			DB
Long Lac Control Dam	Thunder Bay	June 1950	Oct 1957		P	DB
Long Lac (P & P)	Thunder Bay	Jan 1951		Α		DB
Long Point	Norfolk	Oct 1914	Dec 1954			OS
Lorne Park	Peel	Dec 1908	Apr 1912			DB
Low Bush	Cochrane	May 1951	Nov 1954			Out
Lower Sturgeon	Cochrane	Sept 1950	- 10	Α	P	Out
Lucan	Middlesex	Mar 1871	June 1873			
		Jan 1881	Dec 1883	Α.		777
Totalona	Davis	Aug 1915		A		DB
Lucknow	Bruce	Jan 1885 Apr 1885	Dec 1893	A		Broken record; DB
Lundys Lane	Welland	Apr 1885 June 1913	Sept 1915			
		Feb 1920	Nov 1922		P	Niagara; DB
Luther Dam	Dufferin	Jan 1951	Aug 1954		-	Popn only in 1951;
		•			_	DB
Lyons	Elgin	May 1883	Oct 1894		P	DB
Mac Diarmid	Thunder Bay	July 1926		A	P	Summer only to 1931 and since 1951; DB
Mac Cue	Lanark	May 1883	Sept 1918		P	Oliver's Ferry; DB
Madawaska	Nipissing	Aug 1915	-	Α		DB
Madoc	Hastings	Jan 1905	July 1914			DB
Maidstone	Essex	May 1882	Dec 1890		P	DB
Magnetawan	Parry Sound	Jan 1924		Α		DB
Maitland	Grenville	June 1953	Apr 1954			OS
Mamainse	A1goma	Jan 1883	Jan 1885		P	DB
Manitou Falls	Thunder Bay	May 1948	July 1955			Summer only, broken record; DB
Manitou Lake	Thunder Bay	Sept 1931	Sept 1937			Summer only; DB
Manitowadge	Thunder Bay	Feb 1956		A		DB
Manitowaning	Manitoulin	July 1880	Jan 1882			
		Jan 1933	Sept 1941			
M 4 * *		Feb 1943	June 1943		_	os
Manotick	Carleton	Oct 1953	Dec 1956		P	Out

Station	County or District	Open	Close	Active 1958	Pcpn only	Notes
Mansfield Maple	Dufferin York	May 1947 Oct 1887	Dec 1947 July 1888		P	DB
		May 1957	3 7	Α	P	DB
Marathon	Thunder Bay	July 1945 Feb 1950	Sept 1945 Sept 1950			
		Aug 1951	_	A		Broken record; OS
Markdale	Grey	Apr 1912	Jan 1920			DB
Markham	York	Dec 1869 Feb 1957	Dec 1872	A	P	DB
Martin	Kenora	Sept 1957		A	P	Out
Matheson	Cochrane	May 1911	Oct 1911	41		Hyslop; Out
Mattagami Dam	Sudbury	Nov 1950	Aug 1951			,020p, 040
	,	Dec 1952	Feb 1957			DB
Mattagami Patrol Dam		Feb 1957		A		DB
Mattawa	Nipissing	July 1882	June 1883			
	a	May 1886	Sept 1899			Out
McVittie	Sudbury	Apr 1899	Sept 1910	Δ.		D.D.
Meaford	Cross	May 1950	Jan 1924	A		DB
weatoid	Grey	June 1913 Apr 1948	Jan 1924 Mar 1949			
		June 1957	Mai 1949	A		OS
Merrickville	Grenville	May 1882	Sept 1885	11		00
		Jan 1888	Aug 1890		P	Out
Meyersburg	Northumber1 and	Oct 1930	U	Α		DB
Michipicotin Falls	A1goma	Dec 1916	Dec 1928		P	DB
Midhurst	Simcoe	<b>July 1</b> 952		Α		DB
Mid1 and	Simcoe	Nov 1888	Jan 1915			
		May 1948		A	-	OS
Midlothian	Parry Sound	Nov 1888	Dec 1896		P	Burks Falls; DB
Mildmay	Bruce	Aug 1950	Oct 1953	Α.	D	Broken record; DB
Miller Lake Forest Millgrove	Bruce Wentworth	Oct 1952 June 1951		A A	P	DB DB
Milton West	Halton	Oct 1950	Mar 1952	А		DB
Minaki	Kenora	May 1930	Sept 1946			Summer only; Out
Minden	Haliburton	Mar 1886	June 1890			,,
		Oct 1942	Sept 1950		P	DB
Minden (2)	Haliburton	Oct 1948	Apr 1949			
		Jan 1956		A		DB
Minden (Forestry)	Haliburton	June 1948	May 1955			Broken record; DB
Mine Centre	Rainy River	Nov 1914		A	-	Out
Minesing	Simcoe	July 1925	Mar 1926		P	DB
Mink Lake Mistinikon	Algoma Timiskaming	Apr 1948	Apr 1951	٨	P	DB
Missinabie	Sudbury	June 1950 Sept 1889	Dec 1901	A	r	To July 1952; Out DB
Mitchell	Perth	Nov 1948	DCC 1701	A		DB
Mitchell (2)	Perth	May 1956	July 1957		P	Summer only; DB
Mobert	Thunder Bay	July 1929	Sept 1930		P	DB
Mono Mills	Dufferin	May 1922	Sept 1924			DB
<b>M</b> ont ague	Lanark	Jan 1896	Dec 1914			Smith Falls; Out
Monticello	Dufferin	Oct 1954		Α		DB
Montreal Falls	Algoma	Jan 1942	Apr 1946			P.D.
Mantro of Direct	Timini	Nov 1949	Dec 1955	A		DB
Montreal River Moose Factory	Timiskaming Cochrane	Dec 1910 Jan 1878	May 1882	A		DB
AUGC FACTOLY	COULT ALLE	Jan 1884	May 1882 Dec 1884			
		Oct 1889	Dec 1938			Out
Moose Lake	Rainy River	June 1950		A	P	DB
Moosonee	Cochrane	Oct 1932		Α		Out
Morrisburg	Dunda <b>s</b>	June 1913		A		Out
Morriston	Wellington	Apr 1948		Α	P	DB

Station	County or District	Open	Close	Active 1958	Pcpn only	Notes
Mount Brydges	Middlesex	Jan 1958		A		DB
Mount Forest	Wellington	Jan 1881	Dec <b>1</b> 898			-
	-	July 1915	Dec 1948			DB
Mount Hope (A)	Wentworth	Nov 1941	Aug 1945			DB
Mount Oliver	Pee1	Nov 1950	July 1951		P	DB
Muir	Oxford	July 1955	Aug 1956		P	DB
Muskoka (A)	Muskoka	July 1934 Dec 1938	Dec 1937		P	Reay DB
		Dec 1936				DB
Nakina (A)	Thunder Bay	June 1939		A		DB
Nakina (Forestry)	Thunder Bay	June 1929	May 1944		P	Summer station; DB
Nakina	Thunder Bay	June 1934	Aug 1936			DB
Nestor Falls	Kenora	May 1932	Sept 1934		_	Out
Newburgh	Lennox & Add.	June 1882	Sept 1883		P	DB
New Glasgow	Elgin	July 1957	1022	A		OS
New Liskeard	Timiskaming	Oct 1923 May 1935	Apr 1933	A		Out
Newmarket	York	May 1933	Aug 1873	Λ.		Summer only
Newmarket	1011	Apr 1875	Dec 1882			Outline 2 Office
		July 1956	2002	A		DB
Niagara	Welland	Apr 1871	Sept 1872			OS
Niagara Falls	Welland	July 1918	Dec 1918			
		Jan 1920	Dec 1922			
		Jan 1934		A		OS
Niagara Falls	Welland	Sept 1921		A		Niagara Falls View;
(O. Hydro.)		4.005	1000			OS
Niagara Falls S.	Welland	Apr 1885	Dec 1892			2.0
Niogogo on the Lake	Lincoln	July 1919	Dec 1921 June 1936			OS OS
Niagara-on-the-Lake Nipigon	Thunder Bay	Jan 1935 Sept 1886	June 1898			03
Mibigon	inunder bay	July 1913	Dec 1914			
		June 1920	Dec 1922			OS
Nipissing	Nipissing	Oct 1915	Nov 1919			
		Jan 1925	Jan 1933			DB
North Bay	Nipissing	Jan 1887	Oct 1889			
		Jan 1895	Apr 1898			
		June 1915	Mar 1920			
		Aug 1924		A		DB
North Bay (A)	Nipissing	Jan 1939	Wa = 1025	A		DB DB
North Bay (2) North Bruce	Nipissing Bruce	July 1934 June 1888	Mar 1935 Dec 1922			DB DB
Northcote	Renfrew	May 1880	Dec 1887			Out
North Glandford	Wentworth	June 1882	June 1890		P	DB
North Gower	Carleton	Jan 1906	Dec 1925			Out
North Gwillimbury	York	Oct 1869	Dec 1877			DB
North Lake	Thunder Bay	June 1921	Oct 1941			DB*
Norwich	Oxford	May 1887	Oct 1888		P	DB
Norwood	Peterborough	Jan 1876	Dec 1880			
		July 1883	Dec 1889			DQ.
		Oct 1912	Jan 1918			DB
Oakville	Hal ton	Sept 1956		A		OS
Oak Ridges	York	June 1918		A		DB
Oba	Algoma	Feb 1926	Oct 1940			Out
Oil City	Lambton	Nov 1953		A		DB
Oil Springs	Lambton	May 1883	Mar 1892		P	DB
Orangeville	Dufferin	Jan 1884	Dec 1912		P	
A = 144 /		July 1949		A		Melville; DB
Orillia	Simcoe	May 1871	Dec 1918			DD
		Jan 1926		Α		DB

Station	County or District	Open	<u>C1</u>	ose	Active 1958	Pcpn only	Notes
Orillia (S.T.P.)	Simcoe	Feb 19:	57		Α	P	DB
Orleans (V.P.G.)	Carleton	Dec 19:			A	P	Broken record; Out
Orono	Durham	May 192			Α		DB
Oscar	Thunder Bay	Jan 19:		1915			DB
Oshawa	Ontario	Sept 18		1891			
		Nov 19		1918			
		June 192		1925			
	*	Dec 19:	52				os
Otonabee	Peterborough	Jan 189	95 May	1911			DB
Ottawa			•				
(City)	Carleton	Apr 18	72 Mar	1890			
		Apr 18	99 <b>M</b> ar	1935			Out
(Albion Rd.)	Carleton	Apr 19.	54 <b>Nov</b>	.1954		P	Out
(Bayview)	Carleton	Nov 19:	53 Dec	1955			Out
(Beckwith Rd.)	Carleton	Jan 19:	55		Α		Out
(Billings Bdge)	Carleton	Oct 19.	53 Oct	1954		P	Out
(Exp. Farm)	Carleton	Apr 189	90 <b>Mar</b>	1899			
		Jan 19	15		Α		Out
(Hogs Back)	Carleton	Oct 19.	53 No <b>v</b>	1954		P	Out
(LaSalle Acad.)	Carleton	Dec 19.	54		Α	P	Out
(Lemieux Is.)	Carleton	Oct 19.	53		Α	P	Out
(N.R.C.)	Carleton	Nov 19.	51		Α		Out
(Rockcliffe) (A)	Carleton	Apr 19	42		Α		DB*
(University)	Carleton	Oct 19.	54 <b>M</b> ar	1955			Out
(Uplands (A)	Carleton	Oct 19	38		Α		DB*
Otterville	Oxford	Sept 18	82 Dec	1887		P	DB
Owen Sound	Grey	July 18	78 <b>Feb</b>	1912			
		Jan 19	16		Α		OS
Oxaline Lake	Thunder Bay	Aug 19.	52 Sept	1956			DB
Pagwa	Cochrane	May 19	0	1934			Out
Pagwa (A)	Cochrane	Aug 19			A		DB*
Palgrave	Pee1	Jan 19.			A		DB
Paris	Brant	Apr 18		1945			DB
Parkhill	Middlesex	Jan 18		1873			DB
Parma	Lennox & Add.	Jan 19		1907			DB
Parry Sound	Parry Sound	Oct 18		1888			
		Jan 19		1909			
n n4 .		Jan 19			A		OS
Pays Plat	Thunder Bay	Aug 19		1000	A		DB
Pelee Island	Essex	Jan 18	-	1898			
		Oct 18		1903			
		Jan 19		1913			D 1 1
		June 19	-	1917			Broken record
		Apr 19		1931			0.5
D 66 1	** *	July 19			A	D	OS
Peffer1aw	York	May 19		1000	A	P	Only to 1950; DB
Pembroke	Renfrew	Feb 18		1888	A		0+
Dombroko (Forestern)	Donfrau	July 19		1042	Α	D	Out
Penbroke (Forestry)	Renfrew	May 19		1942		P P	Summer station; Out
Penetanguishene	Simcoe	Jan 18	- ,	1884		P	OS Out
Perth	Lanark	Oct 19 May 19		1949			
Peshu Lake	Algoma	,	0				Summer station; DB Out
Peterbell Peterborough	Algoma	Mar 19	ept sept	1930			Out
(O. Hydro.)	Peterborough	Sept 19	40		A	P	DB
Peterborough	Peterborough	Apr 18		1887	И	r	DD
receibolough	recerporough	Jan 18		1001	A		DB
Peters Corners	Wentworth	Apr 19			A		DB
					**		

Station	County or District	Open	<u>Close</u>	Active 1958	Pcpn only	Notes
Petrolia	Lambton	Apr 1883	June 1888			
retiona	Lambton	Apr 1883 Nov 1953	June 1000	Α	P	DB
Petrolia (2)	Lambton	Dec 1885	June 1888		P	DB
Pickle Lake	Patricia	July 1930	Sept 1930		P	
D: 4	Deles - Educad	June 1933	T. 1 - 1020	A	70	Broken record; Out
Picton	Prince Edward	Nov 1915 Jan 1934	July 1920 Aug 1938		P P	
		Oct 1956	Oct 1957		r	os
Pine Grove	York	July 1957	000 4701	A	P	DB
Pine Portage	Thunder Bay	June 1950		A	P	DB
Plattsville	Oxford	July 1871	Dec 1872			DB
Point Clark	Bruce	Jan 1871	Mar 1914		-	OS
Pontypool	Durham	Sept 1947	Oct 1949	Α.	P P	DB
Poplar Mills Porcupine	Middlesex Cochrane	Mar 1956 Jan 1914	June 1915	Α	r	DB Out
Porquis Junction (A)		Oct 1938	Mar 1955			Out
Port Albert (A)	Huron	July 1941	Nov 1945			os
Port Arthur	Thunder Bay	Jan 1880	July 1941			OS
Port Arthur						
(Forestry)	Thunder Bay	June 1926	Sept 1934		P	os
Port Arthur (2)	Thunder Bay	Jan 1936	Apr 1939			Storm Signal Sta. A; OS
Port Burwell	Elgin	Jan 1904	Feb 1916			OS
TOTE BULWELL	115111	Aug 1917	Aug 1918			00
		Jan 1920	July 1921			Broken record; OS
Port Credit	Pee1	Nov 1948	Mar 1949			1
		Nov 1951		Α	P	OS
Port Dalhousie	Lincoln	Jan 1875	Dec 1878			
		Jan 1910 May 1957	June 1921	A	P	Grantham OS
Port Dover	Norfolk	Jan 1874		A		Observations no good
2027 20702	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	J 442 2011				1924-28; OS
Port Elmsley	Lanark	Mar 1948		Α		(Perth) P to 1951;
						DB
Port Hope	Durham	Jan 1884	Dec 1890			
		Dec 1891	Dec 1892			0.5
Port Perry	Ontario	Apr 1896 Apr 1885	Feb 1910 Dec 1889		P	OS DB
Portland	Leeds	Apr 1953	Feb 1958		-	DB
Port Rowan	Norfo1k	Jan 1894	Oct 1898		P	os
Port Stanley	Elgin	Jan 1874	Mar 1924			
		Aug 1948	Jan 1950			
Description of Total	0	Aug 1957	1.000			os
Presqu' Isle Preston	Grey Waterloo	July 1875 May 1953	Aug 1898	A	P	OS DB
Princeton	Oxford	Apr 1883	Aug 1913	A	P	DB
Prospect Hill	Perth	Mar 1956	11006 2720	Α	P	DB
Providence Bay	Manitoulin	July 1897	Dec 1903			
		May 1911	Apr 1940			os
Purdy	Hastings	July 1955	- 4004	A	P	Out
Putnam	Middlesex	Apr 1883	June 1886		P	DB
Queensboro	Hastings	Aug 1914	Dec 1946			Broken record; DB
Queenston	Welland	Mar 1922	July 1928			os
Quorn	Kenora	Apr 1915	- ,	Α		DB
Dames d. Dare 1 to	1611	M 4050				D.D.
Ragged Rapids Rainy River	Muskoka Rainy River	May 1950	Dec 1927	Α		DB Out
Ramsay	Sudbury	Apr 1916 Nov 1948	Dec 1927	Α	P	DB
Ranel agh	Brant	May 1883	Oct 1885	**	P	DB
		-				

	County or			Active	Pcpn	
Station	District	Open	Close	1958	only	Notes
Ranger Lake	Sudbury	May 1938	Apr 1943			
		Nov 1949	Apr 1953			Broken record; DB
Rat Rapids	Patricia	July 1934	July 1953			Out
Ravenna	Grey	June 1948	Jan 1953			DB
Rayner	Algoma	May 1950		A		DB
Red Cedar Lake Dam	Nipissing	May 1950	Sept 1954		P	DB
Redickville	Dufferin	Oct 1944		A		DB
Red Lake	Patricia	Aug 1930	Aug 1934			
		Aug 1938	July 1957			Out
Redmond	Thunder Bay	June 1952	Sept 1956			Summer station; Out
Regent	Algoma	Jan 1932	Nov 1935			DB
Renfrew	Renfrew	Aug 1882	Oct 1899			
		July 1902		Α		Out
Reserve 40	Kenora	June 1913	Dec 1913			Ingolf; Out
Richards Landing Rideau Canal	A1goma	Apr 1924	July 1926			OS
(Bobs Lake)	Frontenac	Dec 1953		A		Out
(Burrits Ldg)	Lanark	Dec 1953		A		Out
(Jones Falls)	Leeds	Dec 1953		A		DB
(Kilmarnock)	Lanark	Dec 1953		A		Out
(Long Island)	Carleton	Dec 1953		A		Out
(Narrows)	Lanark	Dec 1953		A		DB
(Upper Brewers)	Frontenac	Dec 1953		A		DB
(Wolfe Lake)	Frontenac	Dec 1953		A		DB
Rideau Ferry	Lanark	May 1948		A	P	DB
Ridgetown	Kent	Apr 1883	June 1903	11	-	DB
Trage to Wil	110110	June 1923	June 1700	Α		DB
Ridgeville	Welland	Feb 1950		A		Broken record; DB
Roblin's Mills	Prince Edward	Jan 1896	Dec 1899	**	P	DB
Rockcliffe	Nipissing	Jan 1877	Oct 1921		-	Stonecliff; DB
Rocklyn	Grey	Feb 1901	Dec 1904			DB
Ronville	Muskoka	Jan 1908	Sept 1926			DB
Rossport	Thunder Bay	Nov 1915	May 1916		P	OS
Rouge Hills	Ontario	Feb 1954	Oct 1955		P	OS
Round Lake	Timiskaming	June 1934	Nov 1934			DB
Rue 1	Sudbury	Aug 1915		Α		DB
Russell	Russell	Mar 1954		Α		Out
Rutherglen	Nipissing	Apr 1891	Oct 1894			
		Apr 1895	Sept 1940			Lake Talon
						Calvin; DB*
C+ A1-	T : 1	M 1005	1000			
St. Ann's	Lincoln	Mar 1895 Aug 1923	Apr 1900 July 1925			DB
St. Catharines		Aug 1923	July 1923			DB
(P. Lab.)	Lincoln	Nov 1928		Α		DB
St. Catharines	Lincoln	Nov 1901	Oct 1903	11		<i>D</i> 5
	21100111	Mar 1911	July 1912			
		June 1915	Dec 1915			
		July 1918	Nov 1956			DB
St. George	Brant	Apr 1883	Dec 1916			DB
St. Joachim	Essex	June 1951	500 2720	Α		P till 1953; DB
St. Marys	Perth	Jan 1888	July 1901			DB
St. Thomas	Elgin	July 1882	Dec 1887			
	0	Feb 1890	Dec 1894			
		Oct 1925		Α		DB
St. Williams	Norfo1k	Apr 1954		A		os
Sand Hill	Pee1	May 1946	Oct 1947			DB
Sand Lake	A1goma	Nov 1950	Apr 1951			
		Nov 1951	Mar 1952			
		May 1953	Aug 1956			Summer station; DB
			-			

	County or			Active	Pcpn	
Station	District	Open	Close	1958	only	Notes
Sandy Falls	Cochrane	Sept 1950		Α	P	Out
Sarnia	Lambton	July 1882	Apr 1912			
		Nov 1926	July 1927			
		Nov 1948	,	Α		Sykeston; OS
Sarnia (R)	Lambton	Sept 1948	June 1951			os
Sauble Forest	Bruce	Dec 1952	-	A	P	DB
Sault Ste Marie	Algoma	July 1889	Aug 1895			
		Apr 1921	Oct 1933			
		June 1945		Α		OS
Sault Ste Marie (2)	Algoma	Sept 1957		A		OS
Sault Ste Marie						
(For)	Algoma	June 1926	Apr 1931			
		May 1943	Sept 1944			Summer station
						1943-44; OS
Sault Ste Marie	Algoma	May 1950	Sept 1954			Point aux Pins
(Insect)						Insectary; OS
Sault Ste Marie	Algoma	Sept 1954	No <b>v</b> 1955			Shingwauk School;
(Shingwauk)						OS
Savanne	Thunder Bay	Jan 1885	July 1906			
		Jan 1914	Sept 1946			DB*
Savant Lake	Thunder Bay	July 1930	July 1944		P	Summer station; Out
Scarboro	York	May 1883	Dec 1906			
		Oct 1911	Apr 1912			DB
Schreiber	Thunder Bay	Apr 1909		Α		OS
Scotia Junction	Parry Sound	July 1924		A	P	DB
Seaforth	Huron	Nov 1870	Mar 1873			Broken record; OS
Searchmont	A1goma	Aug 1915	Sept 1918			DB
Seeley	Muskoka	Jan 1875	Dec 1884			Huntsville; DB
Sellwood Junction	Nipissing	May 1915	Dec 1915			Out
Shannonville	Hastings	Jan 1884	Dec 1894			OS
Sharon	York	Apr 1886	Dec 1892			DB
She1burne	Dufferin	Sept 1909	Feb 1913			DB
Shirley Bay	Carleton	Feb 1954	Oct 1956		P	Out
Simcoe	Norfo1k	Mar 1866	Jan 1888			
		Jan 1921		A		DB
Sioux Lookout (2)	Kenora	Jan 1914	Sept 1934			Out
Sioux Lookout (A)	Kenora	Aug 1930		А		In town before 1935;
						Out
Sioux Lookout (3)	Kenora	Apr 1930	Dec 1933			Summer station; Out
Sioux Narrows	Kenora	Oct 1933	Sept 1936			
		June 1940	Aug 1955			Out
Smith Falls	Lanark	May 1902	Dec 1905			
		May 1921	May 1923			Broken record; DB*
Smithfield	Northumber1 and	Aug 1949		A		DB
Smoky Falls	Cochrane	May 1922		A	_	Crystal Falls; DB
Snelgrove	Pee1	Nov 1950		A	P	DB
Sombra	Lambton	Mar 1887	Dec 1892			Broken record; OS
South Bay Mouth	Manitoulin	Aug 1954	* 1005	A		OS
South Falls	Muskoka	June 1920	Jan 1925			
		Nov 1956		Α		Muskoka Falls; DB
Southampton	Bruce	Jan 1874	Nov 1952			2.0
C	C111	Sept 1953	Dec 1956	A		Saugeen; OS
Spencerville	Grenville	Feb 1953	T 1 1070	A		Out
Stayner	Simcoe	Feb 1870	July 1879			
		Apr 1948	Feb 1953			Decker 1 DD
Sharman (2)	C :	Jan 1954	Dec 1957	Α.		Broken record; DB
Stayner (2)	Simcoe	Apr 1955	A 1020	Α		DB
Steep Hill Falls	Algoma	Mar 1915	Aug 1939			DB
Stevens	Thunder Bay	Jan 1945	June 1946			Out
		Sept 1949	Sept 1955			Out

Station	County or District	Open	Close	Active 1958	Pcpn only	Notes
Stevens (Camp 102)	Thunder Bay	May 1948	Mar 1949			Out
Stewartville	Renfrew	May 1950		A	P	Out
Stirling	Hastings	May 1883	Nov 1885			DB
Stirling (R)	Hastings	Mar 1940		Α		DB
Stoney Creek	Wentworth	Jan 1884	Oct 1927			os
Stoney Point	Essex	May 1882	Dec 1883			os
Stouffville	York	Feb 1895	July 1901			DB
Stratford	Perth	Sept 1860	Dec 1887			
		Jan 1894		Α		DB
Strathburn	Middlesex	Sept 1939	Apr 1942			USWB Form 1135; DB
Strathroy	Middlesex	Mar 1879	Apr 1885			·
		Jan 1907	Nov 1913			
		Oct 1953	Aug 1954		P	DB
Sturgeon Falls	Nipissing	Jan 1883	July 1884			
		May 1900	Oct 1901			
		Mar 1915	Dec 1922			DB
Sudbury	Sudbury	July 1887	Nov 1889			
		Aug 1914	July 1930			DB
		May 1918	July 1930			DB
		Aug 1947	Jan 1955			DB
(A)	Sudbury	Feb 1954	_	Α		DB
(Forestry)	Sudbury	May 1926	Nov 1934			DB
Summit Control Dam	Thunder Bay	June 1950		Α	P	Out
Sundridge	Parry Sound	Jan 1914	May 1915	11		out
JuildTuge	raily sound	May 1928	Oct 1928			DB
Sunshine	Huron		Dec 1904			DB DB
Swains Lake	Patricia	Apr 1883 June 1933	Oct 1934		P	Out
Sydenham	Frontenac	Sept 1903	Feb 1917		P	DB
Talbotville	Elgin	July 1953		Α	P	DB
Tavistock	Oxford	June 1956	Nov 1956	••	P	DB
Tecumseh	Es <b>s</b> ex	Jan 1883	July 1883		P	OS
Teeswater	Bruce	May 1883	Nov 1885		_	00
2 CCOM at CL	Diuce	Apr 1887	Sept 1887		P	DB
Thedford	Lambton	Apr 1883	Feb 1897		P	DB
Thompson	A1goma	Feb 1890	Dec 1899		P	OS
Thornbury	Grev	May 1948	Sept 1951		P	Summer station; OS
Thornhill	York	Feb 1870	Jan 1872		-	DB
Thoro1d	Welland	Dec 1893	Feb 1897		P	DB
Tilbury	Kent	Mar 1948	Feb 1949		P	DB
Timagami	Nipissing	May 1934	Sept 1940		-	Broken record; Out
Timagami (Post)	Nipissing	June 1926	Sept 1928			Out
Timmins	Cochrane	Apr 1922	осре 1720	Α		Out
(A)	Cochrane	Apr 1955		A		Out
(Ont. Hydro.)	Cochrane	July 1951		A	P	Out
Tobermory	Bruce	Feb 1914	Sept 1955	**	•	0 40
20002	Diuce	June 1956	OCPU 1755	Α		Broken record; OS
Toronto	York	Dec 1839		A		Longest record in
						Canada. Homogene- ous record begins
tra .						Jan. 1841; OS
Toronto						
(Admiral Rd)	York	Mar 1949	Oct 1954			OS
(Beverley Hills)	York	Nov 1957		Α	P	DB
(Birch Cliff)	York	Dec 1952	Dec 1953		P	os
(Balmy Beach)	York	Jan 1953	Aug 1956		P	os
(Bloordale)	York	June 1957		A	P	DB
(Broadview)	York	Dec 1955		Α	P	DB
(Centre Is.)	York	Jan 1951	Jan 1952		P	DB

0	County or	0	<b>71</b>	Active	Pcpn	N
Station	District	Open	Close	1958	only	Notes
Toronto (cont'd)					_	
(Deer Park)	York	Sept 1890	Jan 1933		P	DB
(Dorset Park)	York	Nov 1957		A	P	DB
(Downsview)(A)	York	Sept 1956		A		DB
(Downsview S)	York	Jan 1951	W 1022	A	P	DB
(Dufferin)(A)	York	Apr 1930	Mar 1932			DB
East	York	Mar 1907	July 1911			D.D.
(P -1 7 -1)	774	May 1947	May 1951		т.	DB
(East York)	York	Jan 1951	June 1957		P	To July 1952; DB
(Fairbank)	York	Apr 1948	June 1949	Α.	P	DB
(Fallingbrook)	York	Nov 1956		A	P	DB
(Glendale)	York	Nov 1957		A A	P	DB DB
(Glenview)	York	Jan 1953		A	P P	
(Highland Creek)	York	Nov 1955		A	P	OS OS
(High Park)	York	Jan 1951		A	P	DB
(Humber Bay) (Island)	York Vork	Dec 1956	A 1027	A	P	Lakeside Home
(ISTANG)	York	Jan 1905	Aug 1927	Α	P	
(Island)(A)	Vo ele	May 1953		A A		08
	York York	Feb 1957		A	P	OS
(Islington West)	York	Jan 1951		A	P	DB DB
(Kingsway)		Jan 1951		A	P	OS
(Mimico) (Malton)(A)	York York	Feb 1958 Nov 1937		A	P	
	York		Tuno 1057	А		Malton (A); DB OS
(Newtonbrook) (Northcliffe)	York	Oct 1953 Oct 1957	June 1957	Α	P	DB
(Oueensway)	York		Cont 1051	A	P	DB
(Rexdale)		Jan 1951 Oct 1957	Sept 1951	A	P	DB DB
	York York		0 -4 1052	А	P	OS
(Scarborough) (Scarlett Rd)		May 1953 Jan 1951	Oct 1953 Dec 1954		P	DB
(South Leaside)	York	•			P	
	York	June 1951	Jan 1958		P	Broken record; DB DB
(Sunnyside) (Victoria)	York York	Jan 1951 Oct 1957	July 1951	Α	P	DB DB
(West Hill)	York		700 1059	A	P	OS
		- T	Jan 1958		P	
(Wexford) (Willowdale)	York York	Apr 1953 Nov 1953	Feb 1958		P	DB
(willowdate)	IOIK		June 1955	Α	P	DB
(Wilson Heights)	Voelv	May 1956		A A	Р	DB DB
(Wilson Heights)	York	July 1953	Com4 1004	A		OS
Trenton	Hastings	Apr 1883	Sept 1886	A		OS
Trenton (O. Hydro.)	Hastings	July 1915		A		OS OS
Trenton (A)	Hastings	Jan 1935	0-4 1056	A	P	DB
Trethewey	Muskoka Patricia	May 1950	Oct 1956		P	DB
Trout Lake	Patricia	Nov 1915	Dec 1927	٨		Beston society Out
Turbino (High Colla)	Cardbaras	Feb 1939		A		Broken record; Out
Turbine (High Falls)		June 1914	No. 1049	Α		DB
Tweed	Hastings	Apr 1925	Nov 1948	Α		DD.
T-:- F-11-	Ch	Dec 1950		A		DB
Twin Falls	Cochrane	Mar 1955		Α		P only in 1957; Out
Uchi Lake	Doteicio	T., 1., 1050	May 1953		P	Out
Uplands	Patricia Parry Sound	July 1950			r	DB
	Timiskaming	July 1886				DB
Upper Notch	TIMITSKAMIING	Sept 1929	Nov 1934	٨	n	Out
Uncolo	Thunder Bay	June 1950		A A	P	DB
Upsala	Haliburton	July 1947	Mar 1907	А		DB
Ursa	HALLDUL CON	Jan 1895				DP
Uxbridge	Ontario	Jan 1909	Sept 1913			DB
OVDITURE	Ontario	May 1899	Dec 1923			DB
Uxbridge (2)	Ontario	Oct 1929	Sept 1950	Λ		
ovnitinge (7)	Ontario	Apr 1948		A		P to 1950; DB
Valora	Kenora	Sent 1057		Α		Out
1 4.4U. &	ncia i a	Sept 1957		A		Out

Station	County or District	91	pen	<u>C1</u>	ose	Active 1958	Pcpn only	Notes
Vankleek Hill	Prescott	Jan	1903	Feb	1906			
· Control of the cont	1100000	Nov	1915		1925			
		Dec	1936	Mar	1938			Out
Victoria	Pee1	Feb	1952	Nov	1954		P	os
Vienna	Elgin	June	1875	Nov	1877			DB
Vineland	Lincoln	Oct	1924			Α		DB
Virgi1	Lincoln	Jan	1894	Dec	1898		P	DB
Waboose Dam	Thunder Bay	Aug	1941	Sept	1956			Out
Wagaming	Thunder Bay	-	1934	Nov	1936			A A DD
Waldemar	Dufferin	Aug	1938	Dec	1939	Α		Armstrong; DB
Walkers Point	Muskoka		1955 1928	Eab	1025	A		DB
Walkerton		Nov		Feb	1935	Α		DB DB
Walkerton (2)	Bruce Bruce	-	1915			A		
Walkerville	Essex	Apr	1957 1929	Sopt	1021	А		DB OS
Wallaceburg	Kent	Dec Jan	1929 1905	sept	1931	A		Broken record; DB
Wanapitei	Sudbury	-	1950	Jan	1952	п	P	To Jan. 1951; DB
Wanstead	Lambton	Apr	1887	•	1890		Г	DB
Wasdells	Ontario	May	1920	_	1921			DB
Wasdells	Ontario	May	1950	Mar	1957		P	from 1953-57; DB
Washago	Simcoe	Jan	1930	Mal	1937	A	P	DB
Warkworth	Northumberland	May	1887	Dec	1888	л	P	DB
Watcomb	Kenora		1933		1935		Г	Summer station; Out
Waterford	Norfolk	Jan	1894	Dec	1896			Summer Station; Out
Materiold	HOLLOIK	Mar	1948	Dec	1090	Α	P	DB
Watford	Lambton	Apr	1883	Dec	1901	Λ	r	DB
Watioid	Lambion	Jan	1912	Dec	1915			
		Jan	1919	Aug	1923			
		Nov	1924	Mar	1929			DB
Wattenwy1	Parry Sound	Mar	1912	Mar	1913		P	DB
Waubaushene	Simcoe	May	1936	Nov	1956		-	OS
Wawaitin Falls	Cochrane	Jan	1913	110 1	1/50	A		Out
Welland	Welland	Oct	1872	Aug	1879			0.20
	11022010		1880	Dec	1886			
		Mar	1892	200	1000	A		DB
Wellington	Prince Edward	May	1948	Tune	1951			os
Wesley	Wellington	Feb	1909	Jan	1913		P	DB
Westminster	Middlesex	Jan	1883	Dec	1933		P	Wilton Grove; DB
Weston	York	Oct	1869		1871		_	
	1011	Apr	1948	Mar	1950		P	DB
Weston (Humber Hts.)	York	Mar	1948	Nov	1948		-	DB
	Leeds		1901		1920		P	DB*
Wexford	York		1912		1929		-	DB
Wheatley	Essex		1887		1889			OS
Whitefish	Kenora	-	1915		1930		P	0.0
***************************************	nemor u	-	1934		1946		-	DB
White River	A1goma	-	1886	осре	2710	A		DB
Wiarton	Bruce	_	1883	Mar	1932			22
	Diuce		1934	Nov	1936		P	OS
Wiarton (A)	Bruce	,	1947	110 1	2/50	Α	~	OS
Widder	Lambton	- ,	1870	Apr	1872	**		DB
Wilsonville	Norfolk		1883	Aug	1886			Broken record; DB
Windsor	Essex		1866	Dec	1887			
	20003	_	1897	Dec	1915			
		Aug	1924	Aug	1929			OS
Windsor (A)	Essex	Aug	1940	45	_ , _ ,	Α		DB
Windsor South	Essex	0	1952	Mar	1955	• •		os
Winona	Wentworth	Mar	1890	Dec	1890			
		Jan	1892		1892		P	os
		J		5 )	- / -		_	

Station	County or District	Оре		en <u>C1</u>		Active 1958	Pcpn only	Notes
Woman Lake	Patricia	Nov	1934	Feb	1936			Out
Woodbridge	York	Oct	1948			A		DB
Woodslee	Essex	Oct	1946			A		DB
Woodstock	Oxford	Feb	1870			A		DB
Wooler	Northumberland	July	1897	Dec	1912		P	Sunnyside; DB
Wyoming	Lambton	May	1888	Apr	1907		P	DB
York	Haldimand	Jan	1936	Oct	1938			DB
Zurich	Huron	Ju1y	1881	Dec	1892			DB



